

DECEMBER 1916 — NO 132

Monthly

A Reference for Buyers

HITCHCOCK'S
**MACHINE
TOOL LIST**

Distributed Free to Machine Tool
Users Everywhere in the United States and to
Dealers in American Machinery Abroad

Published by
A·H·HITCHCOCK
1220-1235 Caxton Building
Chicago

HISEY

Electric Drills and Grinders



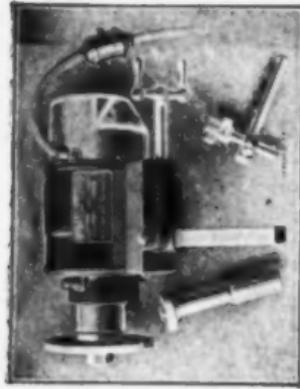
Combination Internal and External Grinder
Two Sizes, $\frac{1}{4}$ and $\frac{1}{2}$ Horse Power

Most Complete Line of
Portable Electric Tools

Write for Catalogue H

The
Hisey-Wolf Machine Co.
Cincinnati, Ohio

Angle Plate Grinder
Five Sizes $\frac{1}{4}$ to 3 Horse Power



Tool Post Grinder
Ten Styles and Sizes



"Hisey" Hand Drill
Eight Styles and Speeds



Grinding Accuracy

Accurately ground tools are prime necessities in getting a product that is precise and interchangeable.



The NAMCO Tool Grinder gets results thru its simple and rigid construction. It is adaptable, having three slides with adjustments in all three directions.

Fixtures for grinding Chasers, Spring Dies, Circular and Blade Tools, Reamers, etc., are standard.

*Complete data upon request. Ask for
NAMCO Threading Book "C."*

THE NATIONAL ACME COMPANY CLEVELAND, OHIO

NEW ENGLAND PLANT
WINDSOR, VT.

CANADIAN SCREW PLANT
MONTREAL, P. Q.

Branch Offices

NEW YORK BOSTON CHICAGO SAN FRANCISCO
DETROIT ATLANTA FOREIGN REPRESENTATIVES
WAREHOUSES—NEW YORK AND CHICAGO

Makers of Gridley Single and Multiple Spindle Automatics at Windsor, Vt., and Acme Automatics, Threading Dies and Screw Machine Products at Cleveland, Ohio

2200 Degrees or 1700 Degrees

Which Is Better for High Speed Steel?

Heat-treating high speed steel the old way, at a temperature of 2200 Fahr., necessarily results in many failures and much loss from pitting, breaking or distortion. If you are handling high speed steel in this way, these losses amount to a substantial sum. By using

HETZY
HEAT EASY

at a temperature of only 1700 degrees Fahr. you not only avoid any loss, either from distortion, breaking or pitting, but you can do all your tempering and hardening with ordinary, unskilled labor, saving the waste of material as well as the high price you pay for special skill.

We Stand Ready to Prove It

You can have 30 days to demonstrate the material and the process in your own plant, on your own work and with your own men. We are glad to assume all the apparent risk, because we know that actually there is none. If you use HETZY once, you won't heat-treat high speed steel without it.

*This Is Good Enough to Investigate
Write Now for More Facts*

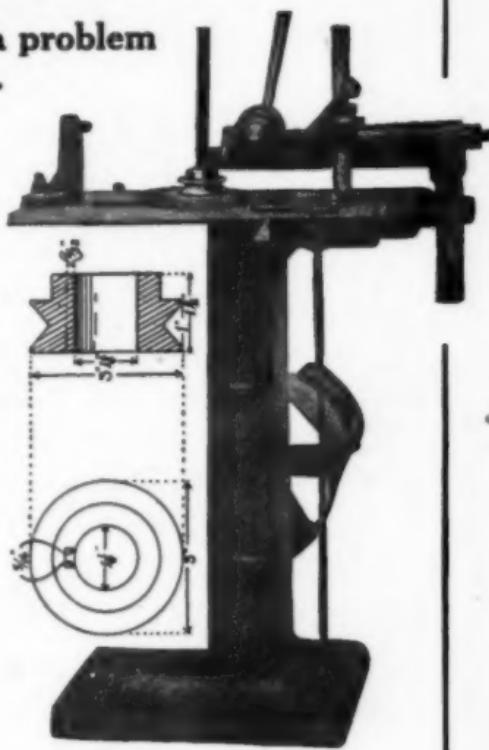
**Bennett Metal Treating Company
Elmwood, Conn.**

KEYSEATING

need not be a problem
in your shop.

No. 2 Keyseater
showing cutting of
keyway in small
pulley; with a dia-
gram of work.

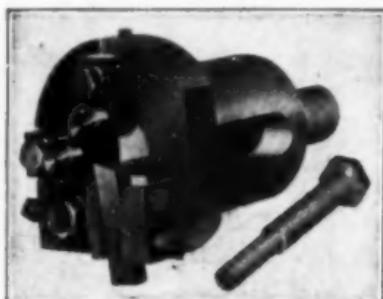
Time—1 minute.



You may have small jobs
like this one or cone pul-
leys, crank handles or
gears to keyseat. Our
Nos. 1 & 2 machines will
handle them satisfactorily.

DAVIS MACHINE TOOL CO., Inc.
ROCHESTER, N. Y., U. S. A.

Watson Tangent Cut Box Tools All Steel



Made in sizes to suit your requirements.

Prices and full particulars on request.

The Biggs-Watterson Co.
Guardian Building, Cleveland, Ohio

YOU Want Tool Holders that have MADE GOOD

Armstrong Tool Holders

Were Awarded The

Grand Prize

**The Highest Possible Award at the Panama-Pacific
International Exposition—1915**

They Always Make Good



They Are Used in Most of the Big Machine Shops of the World

Send for Catalog

Armstrong Bros. Tool Co.

"The Tool Holder People"

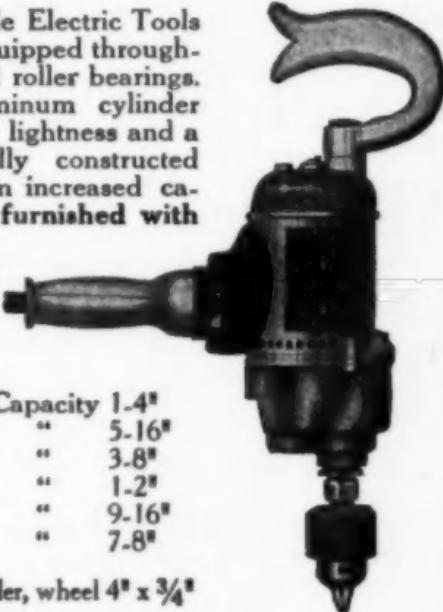
308 N. Francisco Ave., Chicago, U. S. A.



Thos Universal Electric Drills

Licensed Under Burke Universal Motor Patent

The only Portable Electric Tools made that are equipped throughout with ball and roller bearings. Made with aluminum cylinder insuring extreme lightness and a powerful specially constructed motor resulting in increased capacity. Can be furnished with Universal, Alternating or Direct current motor 110 or 220 volts.



000	Drilling Capacity	1.4"
00	"	5-16"
0	"	3.8"
01	"	1-2"
1	"	9-16"
2	"	7.8"

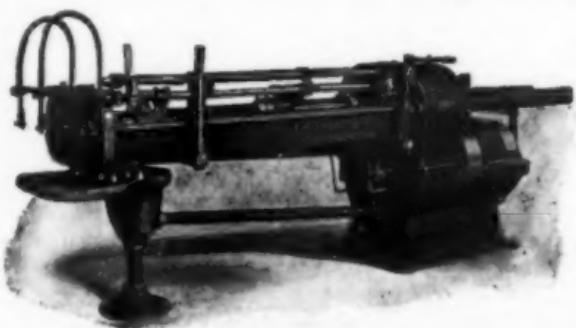
No. 6 Electric Grinder, wheel 4" x 3/4"

Shipped On Trial

**Independent Pneumatic
Tool Company**

Chicago New York Pittsburgh Detroit
San Francisco Birmingham Montreal

Broaching Machines And Broaching Tools



Our Famous Double Machine

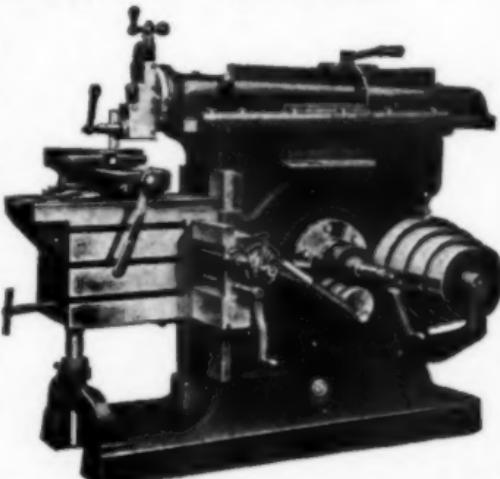
The Most Complete Line In The World. We make our machines in 5 sizes and 11 types. *Send for particulars.*

THE J. N. LAPointe CO., - - - New London, Conn.

SHAPERS

12", 14", 16"
Plain Crank,
16", 20", 25"
B. G. Crank,
either Cone
Driven or
through
Speed Box.

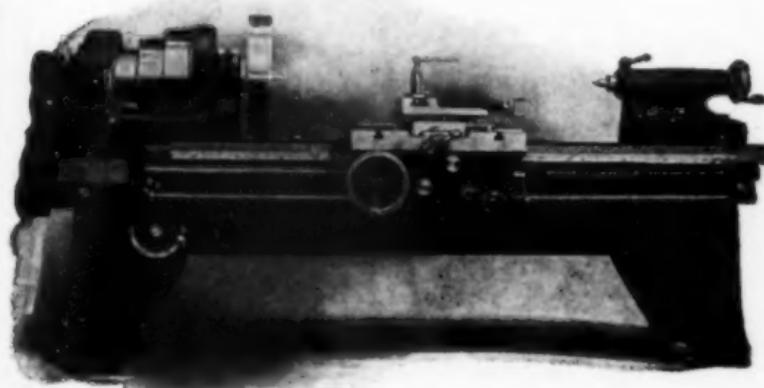
24", 28", 32"
Geared
Shapers of
the Belt Shift
type.



The Smith & Mills Co. Station B
Cincinnati, O., U.S.A.

WALCOTT LATHES

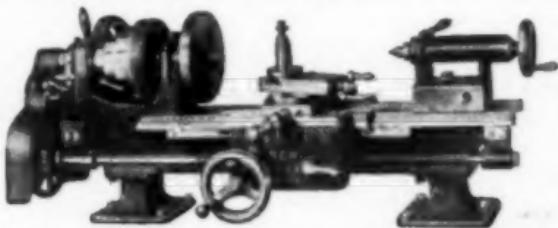
Made in 14, 16, 18, 20, 26 and 28" sizes



For
Tool-Room and
Factory

Walcott Lathe Co.
Jackson, Michigan

The New Dalton 6" Lathe
Has a Big Margin of Power



The Actual Swing is $7\frac{1}{4}$ -in., and it has ample power and strength for a 14" lathe job. Built to stand the strain of heavy turning, and with the accuracy required for fine work. Screw cutting, 3 to 144 per inch. Bench type, on standard high legs or cabinet leg. Electric drive, power driven or foot power. Write for Bulletin B-602.

DALTON MACHINE CO., Inc., 1911 Park Av.
NEW YORK, U.S.A.

Turret Lathes and Screw Machines

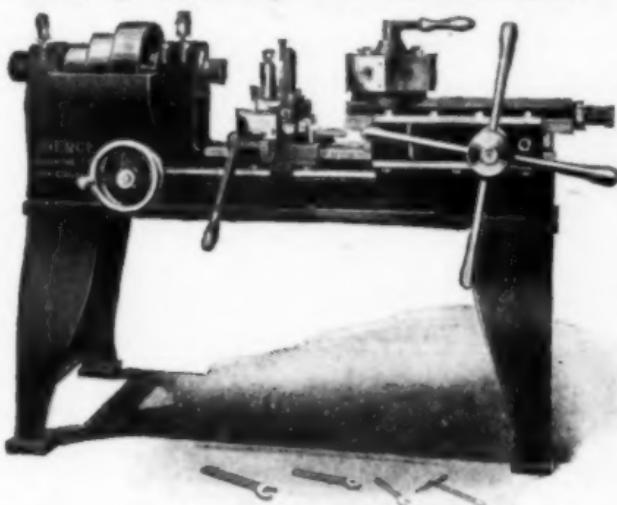


built and designed to give maximum permanent accuracy and efficiency. Reasonably priced.

Himoff Machine Co., Inc.
134 Mott Street, New York, U.S.A.

Pierce 14" Turret Lathe

Heavy Pattern, With Plain Head



Especially adapted to the rapid production of Brass and Cast Iron parts requiring several finishing operations

This is a sturdy machine, for producing work of absolute accuracy under the strain of universal use.

It is also a wonderfully handy machine, with every convenience for expediting the work.

Sturdy, convenient, accurate and built for rapid production, and can be furnished with any attachments and tooling that may be required—what more can you want? And it has our guaranty behind it.

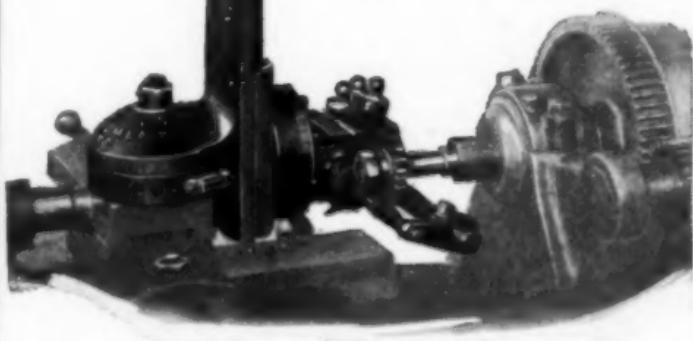
If you will furnish us with your name and address, we shall be delighted to post you on the construction of this machine in detail, and the better mechanic you are the better we will like it.

Pierce Machine Tool Co.

617 W. Jackson Blvd., Chicago, Ill.

Garrett Lathe Attachment

One Low-Priced Tool for
Doing the Work of Half
a Dozen Large Machines



Cutting Key-way in Short Shaft

Some of the jobs it will do:

Spur Gears	Slotting and
Bevel Gears	Graduating
Angle Gears	Making and Drilling
Surface Milling	Flanges and Couplings
End Milling	Making Hex. Bolts
Woodruff Keyseats	and Nuts
Plain Keyseating	Grinding and Sharpen-
Index Plates	ing Small Tools

—and much other work, limited only by the ingenuity of the operator; and it does it all accurately, easily and thoroughly. Furnished with index head, if desired. Can also be used on drill press and other tools.

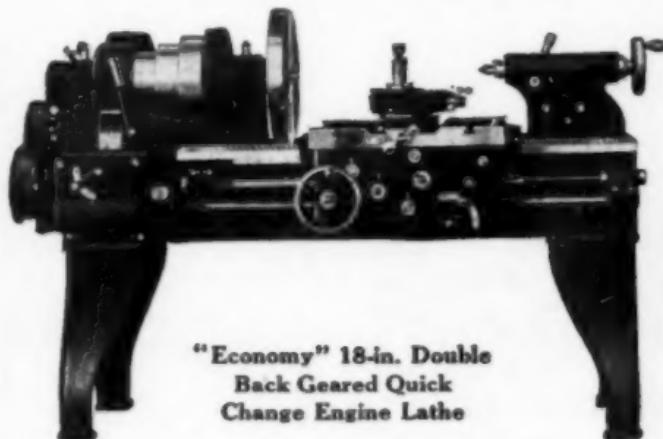
For description and money-saving price, write to—

Garrett Attachment Company
Nashville, Tenn.

"The Economy"

High Duty 18" D.B. Lathe

For the American Trade



**"Economy" 18-in. Double
Back Geared Quick
Change Engine Lathe**

We have not accepted a foreign order for nearly two years.

While others are filling war orders, we are placing "Economies" in our own country. And wherever an "Economy" gets in, it will be mighty hard for anybody to get that trade away from us.

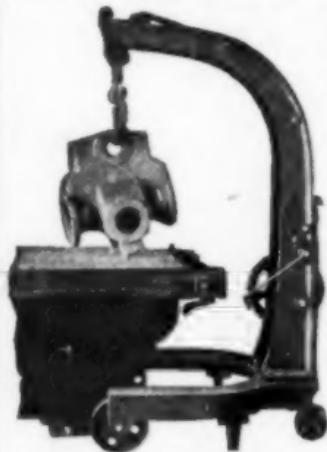
And while even the big new addition to our factory has not enabled us to keep pace with the American demand, still we would like to get in touch with a few more up-to-date concerns who are willing to anticipate their requirements for the sake of securing an extra-good lathe at a fair price from a factory which keeps down its "overhead."

Your inquiry is most cordially invited

Rockford Lathe & Drill Co.
1827 Fourteenth Ave., Rockford, Ill.

It's Like Hiring a Samson

The Canton Crane is Equal to 6 to 10 Men



It handles castings and machinery, or anything heavy and awkward, quickly and safely. It saves money, muscle, time and temper.

"The Handiest Tool In the Shop"

is made in several regular and special sizes, and furnished, if so desired, with double gears at a small extra cost.

*A 30 day trial for the asking—
And why not ask today?*

CANTON FOUNDRY & MCHE. CO., Canton, O.

Repairs—When Necessary— Easily Made

One of the most valuable features of Euclid Hoists is the wonderful accessibility and interchangeability of the different parts. Each part is quickly available with a minimum of effort, and when changes or adjustments are necessary they can be made "on a ladder" without removing the hoist from the track beam.

ELECTRIC
EUCLID
HOISTS

This feature alone commends Euclid Hoists to busy manufacturers, but our new catalog describes many other valuable features of vital importance to all purchasers of hoisting equipment. Write for it.

The Euclid Crane & Hoist Co.
Dept. C EUCLID, OHIO, U. S. A.



Terrell's Steel Shelving in a Motor Plant

Weigh Up—

**The Merits of Terrell's Sectional Steel Fixtures
Against Wood, and What Result Do You Get?**

SECTIONAL STEEL FIXTURES are adjustable, non-inflammable, unbreakable, never wear out, need no repairs and occupy less space.

WOODEN FIXTURES are not adjustable, they are easily inflammable and breakable, they wear out quickly and require repairs, and they occupy more space.

The only possible argument against our Sectional Steel Shelving is in first cost, which is largely imaginary, for you can buy what you need now and add to it as desired, economizing in money, space and arrangement.

Also our Steel Shelving will prove the better permanent investment, for after it is installed all expense stops, and it gives you what you really want.

*Tell us just what your shelving requirements are
We will submit estimates without obligating you*

Terrell's Equipment Co.

Hall & Division Sts.,

Grand Rapids, Mich.



Hartford Taper Gage

Insures Accurate Tapers
And Saves Much Time

It is an inexpensive testing device with which you can detect instantly any inaccuracy in your tapers to less than a thousandth of an inch.

It is so great a convenience and time saver in insuring the absolute accuracy of all kinds of tapers that if you had to do without it after using one for a while, you would miss it as much as a hammer or a saw.

Customers who bought one have since ordered several more to distribute throughout their plants.

Better write now, before it escapes you

Hartford Special Machinery Co.

285 Homestead Ave.,

Hartford, Conn.

Abbott Steel Bearing Balls

Are Accurate and Highly Finished



In Sizes $\frac{1}{8}$ to $\frac{5}{8}$ -Inch

Write for estimate on any grade desired.
Will be glad to have your inquiries.

The Abbott Ball Company

Elmwood District, Hartford, Conn.



JOHNSON

BUSHINGS

and

Cored Bronze Bars

Bushings—machined or in the rough—to your specifications or from over 1500 stock patterns.

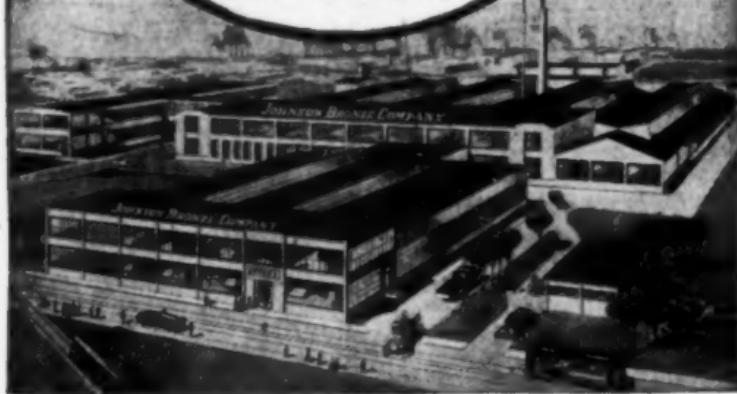
Cored Bronze Bars for repair work. Over 40 different size bars each packed separately in carton. Special garage assortments.

Write Dept. H. L. for prices

JOHNSON BRONZE CO.

Formerly The American Car and
Ship Hardware Manufacturing Co.

NEW CASTLE, PA.



You Are Wasting Time!

If you are paying a man to swing a sledge on your light tool dressing, miscellaneous forging and blacksmithing, cut out that expense now by installing a Barr pneumatic light forging hammer.

The cost is small! The results in time saved and production increased will please you.

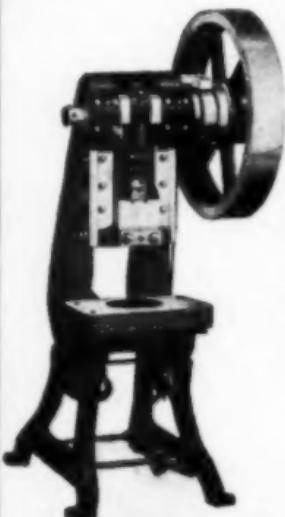
Write for Circular 10 H

**H. Edsil Barr, Mfr.
Erie, Penna.**



Here Is A Press

With Plenty of Steam
Back of THE PUNCH



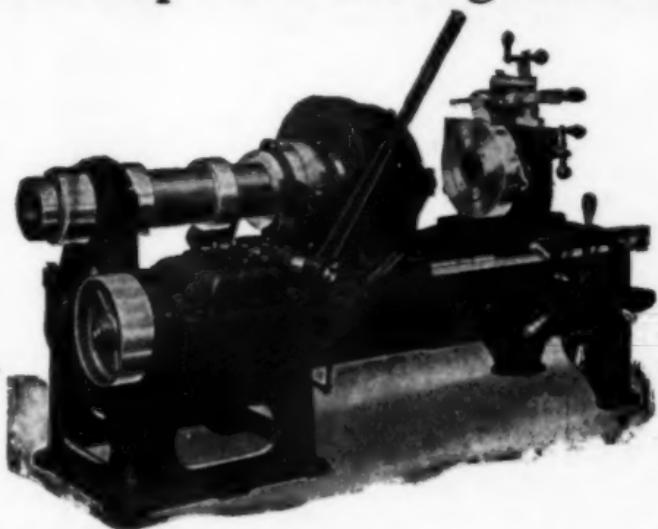
HIGH DUTY
ROCKFORD
PUNCH PRESSES

Made in straight side and inclinable types. Their great power backed by rigid design enable them to do the work you demand and stand up to it.

Write For Catalog

**Rockford Iron Works
Rockford, Ill.**

B. & Ks. Will Lower the Cost of
Your Pipe Threading in 1917



For a Third of a Century—

We have been building and perfecting our pipe threading and cutting machines. Improvements have been embodied as they suggested themselves, adding to their convenience and wearing qualities. Every one is equipped with the Peerless Adjusting Mechanism, which adjusts instantly to 1-1000 of an inch without the use of tools.

Today we offer you a choice of 17 styles and sizes, for pipe from $\frac{1}{4}$ to 18 in. in diameter. If you have only one size of pipe to thread, we can fit you with an especially fast machine, or if you handle many sizes, we can furnish machines on which changes are made without removing a screw.

*B. & Ks. are economical and reliable for all pipe threading requirements.
Write us about your 1917 needs.*

Bignall & Keeler Machine Works
Edwardsville, Ill.

Peter Bros. Abrasive Cutter Saves Material Labor & Time

The 1-16 inch Saw Goes Through Anything

Cuts off High Speed Steel as if it were wood, and practically without waste. Reamers, drills, forming tools, as well as tubes, rods, and bars of brass, copper or aluminum are cut smooth and square. Doesn't draw the temper, and saves grinding. Its use spells e-c-o-n-o-m-y in tool room and machine shop.

8" Size \$17.50, with C. S.

Splendid for tool room. Cuts high-speed steel up to $\frac{1}{2}$ " square.

12" Size \$44, with C. S.

Cuts up to $\frac{3}{4}$ " diameter, round or square, at any angle up to 45 degrees. Ball bearing.

15 Days' Free Trial

Write us or ask your dealer

PETER BROTHERS MFG. CO.
115 Railroad St., Algonquin, Ill.



AUTOMATIC HIGH SPEED SAW

Attention is invited to the "Marvel" No. 5. Cuts duplicate pieces faster and at less cost than any other method. Entirely automatic.

Feeds the Bar

Write for full information

Armstrong-Blum Mfg. Co.
341 N. Francisco Avenue
Chicago, Ill.



"Marvel" No. 5



The Strongest Evidence we can set forth for the Peerless High Speed Heavy Duty Metal Cutting Saw is the fact that wherever they are shipped on approval they have always made good, and in many cases repeat orders have followed in lots up to forty-two.

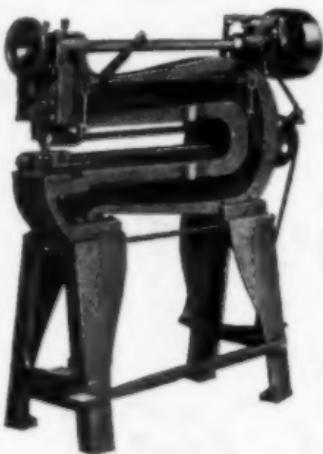
It is also surprising the reports that are coming in, stating how it has increased production. Here is what one customer writes:

"It does not seem possible, but we are cutting off blanks in $5\frac{1}{4}$ -in. round cold rolled steel in one-fifteenth of the time that it took us on our old saw, and moreover the blade stands up better. The blades are the same kind and size that we used on the old machine."

*Write us for our trial proposition—it is of such interest
that no manufacturer can afford to pass it up*

Peerless Machine Company
1609 Racine Street, RACINE, WISCONSIN

The New Gray Sheet Metal Cutter



Not a Rotary Shear

Capacity: 3-16" steel plate.

Speed: 20 to 30 inches a minute.

Shapes: Cuts any shape or design within scope of its throat.

Metal left flat, with clean, uncrimped edges.

Unsurpassed for experimental work, machinery building, for templets, gear covers, engine liners, etc.

Shall we post you further?

W. J. SAVAGE CO., Inc., Knoxville, Tenn.

"Quickwork" Shears

Cut Any Curve
in Sheet Metal

Circular or irregular shape, without waste of stock, and faster than 5 men can do the work with hand snips. Save from 10 to 40% of material; 75 to 90% of labor.

This No. 2 cuts up to 14 ga. steel; others adapted to thinner or thicker stock up to $\frac{3}{8}$ ". Metal left flat, edges true. Circular or other openings made without cutting in from side.



Want to cut costs? Write for details.

H. Collier Smith, 815 Scotten Ave., Detroit, Mich.



Why Is It

That so many large shops are now equipped and being equipped with

The Newly Improved Racine High Speed, Metal-Cutting Machine?

FOR MANY GOOD REASONS—among others—because for speed, accuracy, economy and ease of operation THE RACINE cannot be surpassed. You MAY NEED ONE NOW. We will send a RACINE on any trial basis that is fair. WRITE US or any good dealer.

Racine Tool & Machine Co.

1500 Junction Ave. S., Racine, Wis., U. S. A.

The Improved Rhodes
Combined Shaper and Slotter

A 2-in-1 Tool
At a Low Price
For Small Work

With Vertical Attachment, as shown, it is a real vertical and horizontal machine.

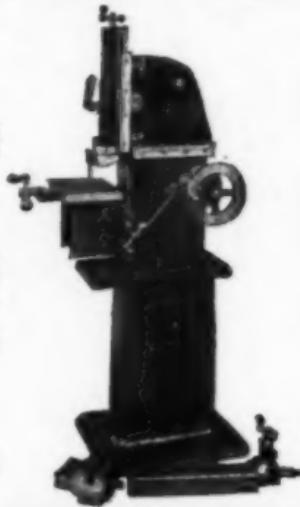
Built like a big machine tool.
But it costs less.

Wonderfully efficient and economical in shaping and slotting light work—in making tools, dies, models, etc., etc.

An economy tool in price and in operation.

Write for full description

Rhodes Mfg. Co.
Hartford, Conn.



A Wonderful Combination
In Riveting



Speed: one rivet per second.
Uniformity: each rivet headed with same degree of tightness or looseness as desired.
Finish: perfectly formed rivet heads, highly polished surface, no hammer or tool marks shown.

Grant Noiseless Rivet Spinning Machines, are the only machines built that will accomplish the above.

Catalog?

The Grant Mfg. & Machine Co.
C. E. Station, Bridgeport, Conn.



Nos. 1, 2 and 5 Shears and Rod Cutter



Nos. 3 and 4 Shears

Send for Shear Catalog

Manufactured and For Sale By

W. C. & F. C. TUCKER, Hartford, Conn., U.S.A.

Hercules Shears and Rod Cutters

No. 0—Shear (Tool Makers Bench Machine) Cuts $\frac{1}{16}$ " Iron Rod, $\frac{1}{16}$ " Flat Iron.

No. 1—Shear, Cuts $\frac{1}{2}$ " Iron Rod and under, $\frac{3}{16}$ " Flat Iron and under.

No. 2—

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$\frac{5}{16}$ " "

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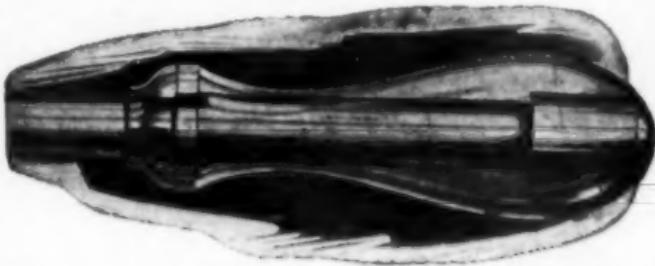
" "

$\frac{1}{4}$ " "

" "

$\frac{5}{16}$ " "

Shear blades have a draw-in cut with no tendency to crowd work out of shear. Pressure is directly over the cut by a rolling contact. Arm of movable blade is operated with a steel band. No springs on the machine.



Quick Action

This is what we call this new Machine Handle. Attached to any power tool, especially the heavier types; adjustments are made with more speed and less effort.

All kinds of standard and special Handles from steel for power tools and similar purposes.

Send for Catalogue and prices.

The Cincinnati Ball Crank Co.
Oakley, Cincinnati, Ohio

When steel, iron, brass or bronze gears mesh with VUL-COT Fibre gears the whole gear train becomes noiseless, wears longer and requires less lubricant.

VUL-COT Fibre-equipped machine tools—whether the fibre be used for gears, washers, light, high-speed bearings or contact drives—give the user better service and turn out more accurate products.

American Vulcanized Fibre Company
560-570 Equitable Building. Wilmington, Delaware

Branches—St. Louis, Boston, New York, Philadelphia, Pittsburgh,
Cleveland, Detroit.

Complete stock for immediate shipment at Chicago



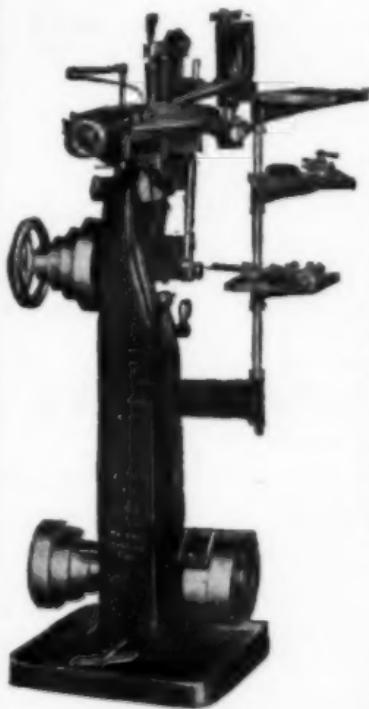
Canadian Agents—

Northern Electric Company
LIMITED

Montreal, Ottawa, Halifax, Toronto, Winnipeg,
Calgary, Regina, Vancouver

Vul-Cot Fibre

Cochrane-Bly Machines Insure Accurate, Low-Cost Filing



No. 2 Filing Machine

Several Government Arsenals use these machines, and they are considered indispensable in the hundreds of factories, tool rooms and machine shops in which they have been installed.

Accurate filing by hand is slow and difficult, therefore expensive and sometimes uncertain.

With Cochrane-Bly Filing Machines it is accurate, rapid and easy—with results certain and the cost at bed rock.

Built in two sizes, for filing dies, punches, jigs, metal patterns, small tools and tool-room work generally.

Used in many a plant with great economy where a finish is required on duplicate parts too delicate to be otherwise machined.



Bench Filing Machine

May we not post you on this big economizer?

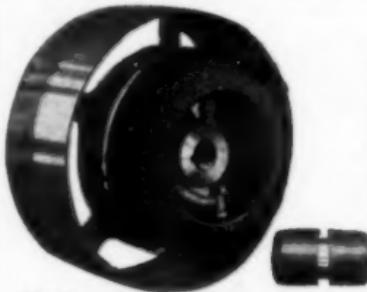
Cochrane-Bly Company

Rochester, N. Y., U.S.A.

Also Cold Saws and Automatic Cold Saw Sharpeners
Universal Shapers for Die and Tool Work

**Edgemont Friction
Countershaft Clutch Pulleys**

Used by Machine Tool Builders Everywhere



Enclosed Type, Plain Oiling

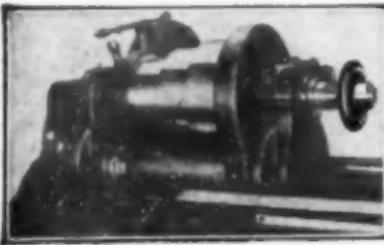
Tried and tested on thousands of heavy duty machines for many years, and never found wanting. They pull all that the belt will, at any speed. No springs or delicate parts. Will not break under hardest usage. Plenty of adjustment for wear. Require but little power to throw in or out.

Write for catalog and names of big users

**The Edgemont Machine Co.
Dayton, Ohio**

Globe Collet Chuck Saves Time

Without leaving his regular position, the operator tightens or releases collet at the nose of spindle



The Globe Collet Chuck is much more convenient than the usual collet chuck used on engine lathes, and saves valuable time.

It's simple, easily attached, and made of the best materials; grips stock firmly the full length of collet.

You will like it. Better write before you forget.

**Globe Engineering Company
412 Traction Bldg., Cincinnati, Ohio**

Simple, Convenient Attachments

are provided with the

Greenfield

Universal Grinder



Each Attachment is designed to serve a single purpose. This means that they are simple and without complicated adjustments to make them serve different purposes.

This makes it easy to change from one job to another and will save a lot of time. We have attachments for all kinds of tool sharpening and tool room grinding.

You had better get our literature

Greenfield Machine Company
Greenfield, Mass., U. S. A.

Combination Disc Grinder & Roll Sander

"Best machine ever built for pattern shop use"

The No. 20 Gardner combines both the disc wheel and the sanding roll into a compact, sturdy and accurate machine. The disc wheel is used for producing flat surfaces and external curves; the sanding roll perfects internal curves which have been roughed out on a band saw.



Both this disc wheel and the roll remove stock with extreme rapidity and accuracy. With this machine at hand your apprentice boy can do, with greater speed and quality, much of the work formerly done by your best man. A Gardner No. 20 soon pays for itself in any modern pattern shop working four or more men.

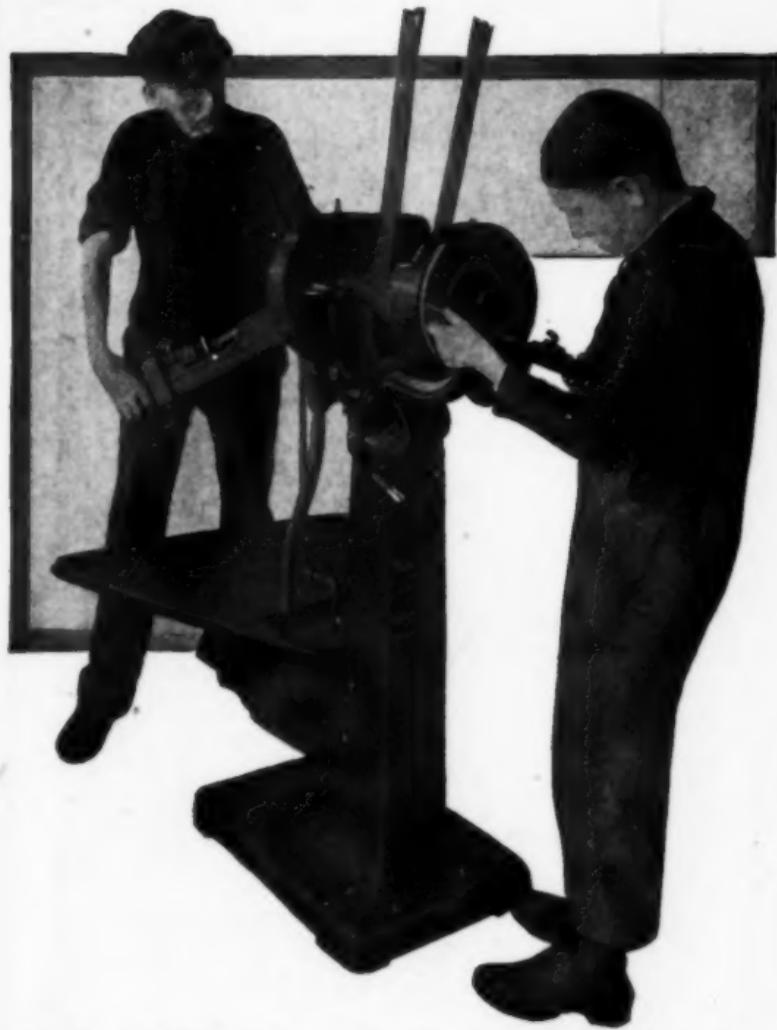
Get the details today

Gardner Machine Co.

The Disc Grinding Authorities

Beloit, Wisconsin

Largest Disc Grinder Builders in the World



Style WPL New Yankee Drill Grinder

(Capacity, No. 60 to 2½")

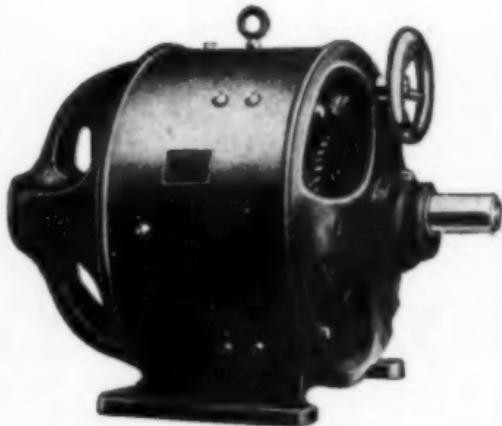
Any BOY in your shop can grind a drill better and
quicker on a new Yankee than your most skilled
mechanic can do it by hand.

Catalog on Request

Wilmarth & Morman Co.

2185 Monroe Ave., N. W. Grand Rapids, Mich., U. S. A.

Reliance Adjustable Speed Motors



Speeds to Suit the Work

Reliance Motors run at **any speed** over any range up to 1 to 10—there are no steps nor jumps. You can get just the speed you need to keep each machine at a top notch production rate on all kinds and sizes of work. To change the speed just turn the hand wheel—no electric controller is needed.

For details write for Folder 10L.
(We build constant speed motors.)

Reliance Electric & Engineering Co.
1050 Ivanhoe Road, Cleveland, O.

Ready
for
Delivery



Accurate Light Punch Press

FOR THE MANUFACTURE of novelties from sheet metal, and for operating a variety of cutting, forming and perforating dies. The No. 1 has exceptional strength and capacity for its size.

It is carefully adjusted to secure accurate working of the dies and to prevent shearing. Pendulum action of lever gives a stroke of maximum power without tiring the operator. Material and workmanship the best. One factory has 20 in operation.

*Price is moderate. Your order can be filled promptly
now—don't depend on tomorrow.*

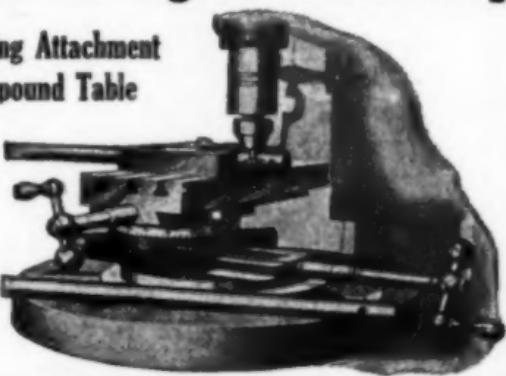
E. O. PARTRIDGE, 2041-2049 W. Lake St., CHICAGO

Also Bench, Column & Cabinet Grinders, Polishing Lathes & Countershafts

Valuable in Big or Small Shop

Davis Milling Attachment and Compound Table

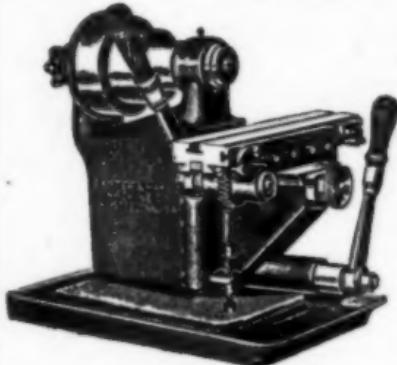
Converts
any Drill
Press from
14 to 42-in.
Swing in
2 Minutes



When your large millers are tied up with work, a Davis comes in handy spotting castings, milling ends of bosses, and many other odd jobs. Does 90% of the lighter jobs as well as a \$1,000 machine. The attractive prices on our air compressor, and our cylinder reamers for reborning the Ford car, will also surprise you. Circulars and prices?

**Hinckley Machine Works, HINCKLEY,
ILL.**

If You'll Furnish the Operator



We would like mighty well to furnish the machine. And if the operator will do his part, and do it well, you will do some business and a lot of it, as this little Miller is designed and built for just that purpose.

Send for circular

The Carter & Hakes Co.
West Winsted, Conn., U. S. A.

AGENTS—for New England and New York, Hill, Clarke & Co.
WESTERN AGENTS—Marshall & Huschart Machinery Co.,
Chicago, St. Louis, Indianapolis.



*Here's Just
The
Machine
For You*

because it will
handle all kinds of
light milling jobs

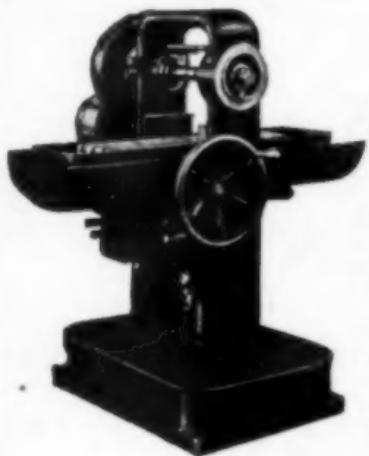
The "Whitney" Hand Miller

is an all around machine, well built and inexpensive. It has features which make it indispensable in any machine shop. With it you can do keyseating, profiling, straddle milling, gear, cam and sprocket cutting, also countless other operations.

Simply send for Catalog No. 8

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Chains—Keys—Hand Milling Machines

For Form And Gang Milling



Briggs High Duty Milling Machine

Designed for wider and heavier cuts.

Takes the full power of a 3½-inch double belt.

Especially adapted for form and gang milling on steel parts for automobiles, guns, etc., or for difficult or heavy milling of any kind,

A powerful machine for reducing milling costs and increasing output.

You can judge it better from full description. Your address?

GOOLEY & EDLUND, Inc., Cortland, N. Y.



This is our **No. 1 Bench Miller**

Our complete line of Millers range from the smallest machine built to our No. 5 (a floor type) weighing 1200 lbs.

We solve Miller problems

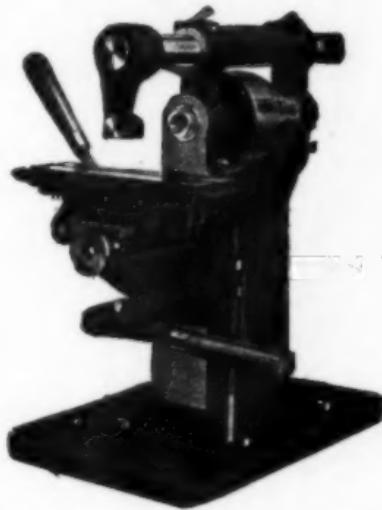
Your Troubles
Our Pleasure

Ask for Catalogue

The Burke Machine Tool Company
Conneaut, Ohio

"BURKE"

No. 3 Milling Machine



Longitudinal feed of table.....	6 inches
Traverse feed.....	3½ inches
Vertical motion to knee.....	8½ inches
Maximum distance between center of spindle and table.....	7 inches
Working surface of table.....	3½x12 inches
Greatest distance between centers (6-inch swing).....	2½ inches
Largest diameter of cone.....	6 inches
Smallest diameter of cone.....	3½ inches
Driving belt.....	2 inches
Taper hole in spindle.....	B. and S. No. 9
Hole in spindle.....	½ inch
Height over all.....	25½ inches
Loose pulley on countershaft.....	7x2½ inches
Speed of countershaft.....	280 revolutions
Weight complete.....	235 pounds
Weight boxed.....	300 pounds

The Burke Machine Tool Co.
Conneaut, Ohio, U. S. A.



No. 24 Press

Efficient
Equipment
Atlas Presses

for building and repairing automobiles and general machine shop operations requiring pressure up to 25 tons and centering capacity up to 38 inches. For driving mandrels; bending and straightening, broaching, embossing with dies, setting bushings and many other every day manufacturing jobs, there is an Atlas Press. All sizes for all purposes. *It will pay you to investigate.*

Atlas Press Co.
317 N. Park Street,
Kalamazoo, Mich., U. S. A.

Arbor Presses

Any width.

Any tons pressure.

Easiest and quickest hand press made.



Quick Acting Power Presses with Automatic Regulation



Hydraulic Machinery

Any Capacity
for
Any Pressing Purpose
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LOURIE MFG. CO.

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Illinois

Cap.

20

Tons

Price

56⁰⁰

Net



WEAVER Forcing Press

WE ARE SPECIALIZING upon this one size and style of press. It is the ONLY press we make, therefore we are able to produce a better article at less money than were we compelled to carry the overhead necessary to produce a great variety of styles.

5-inch, 9-pound channel steel frame, 32-in. wide, 15-in. hand wheel, carried upon ball bearings. Bronze Thrust Bearings, Screw 2 in. in diameter with 3-pitch Acme thread. Range of movement, 12 in. The screw does not revolve.

Net Price (^{32 - in.}_{Width}) \$56.00

Weaver Manufacturing Co.

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Nicholson Expanding Mandrel



It saves time—this mandrel.

It saves labor.

It increases production.

It reduces investment in plant.

It reduces overhead.

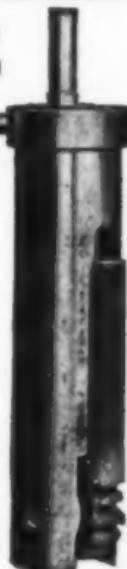
It does countless other things naturally, quickly, easily—other things that make it very much worth your while to have us send you one of these expanding mandrels for a 30-day free test in your plant, without obligating you to buy it.

W. H. NICHOLSON & CO.
117 Oregon St., Wilkes-Barre, Pa.

WHOLESALE

KEYSEATS

Are milled with this tool. All you need is a drill press. Can be used in shops large and small. If you write for catalog O it will tell more in detail.



National Machine Tool Company
2268 Spring Grove Ave., - Cincinnati, Ohio

Radbore Heads

Maximum
Accuracy

Minimum
Cost



For All Square and Rectangular Hole Work

Rejections are expensive, especially so now that the prices of all materials are far above normal.

Radbore Heads save this expense. Their use obviates all rejections caused by the tearing action obtained through other methods.

Radbore Heads remove the stock in the same manner as an ordinary twist drill, leaving the material, whether metal, wood, or stone, its full strength.

Interesting Booklet On Request!

LAWSON & CO. INC.
90 West St. New York City

It Pays For Itself—

Often the First Time You Use It



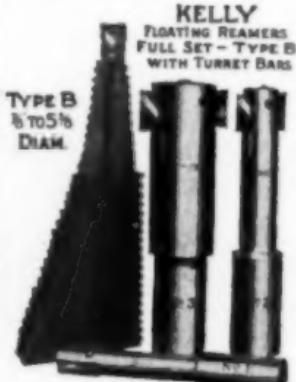
Takes Out A Broken Tap As If It Were Whole, and Without Injury To The Threads

Simple, easily operated, effective. The hardened steel fingers slip into the flutes of the tap, where they are firmly supported by the holder and sleeve, while the tap is backed out with wrench. The value of the extractor is out of all proportion to its small cost. It is indispensable wherever taps are used, because it insures against the inevitable loss that a broken tap involves. Sizes from No. 8 to 1 1/4". Sixty days' free trial if desired.

Send Address For An Interesting Folder

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Kelly PRODUCTION Tools



The outfit shown in cut, with three turret bars and 36 type B reamers, gives any diameter in ten thousandths from 15-16ths to 5% inches. Each reamer has an adjustment of $\frac{1}{4}$ -inch.

Kelly Boring and Reaming Tools are made for any diameter from 9-16ths to 12 inches and larger.

Write for the Catalog

THE KELLY REAMER CO.
CLEVELAND, OHIO, U.S.A.

C. W. Burton, Griffiths & Co., London, English Agents.
Burton Fils, Paris, French Agents. 40 Domestic Agencies.

You Are
Prepared
for the
Hard Stunts

when you have at
your command the
super-convenient,
time-saving

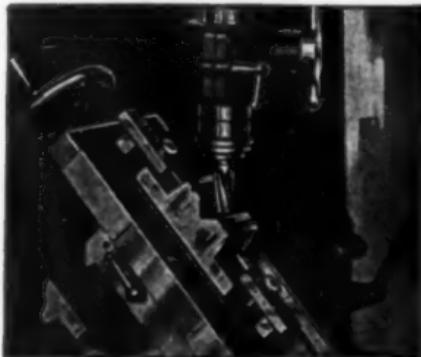


Knight Milling and Drilling Machines

They mill, bore and drill at any angle with only one setting of the work, thereby saving much valuable time in the tool room and experimental department. We build them in three sizes, which weigh respectively 600, 1200 and 2300 lbs. Each of them has the convenience of 2 or 3 ordinary machines.

W. B. Knight Machinery Company
St. Louis, Mo.

*If you have
any hard
machining to
do, it will pay
you to send for
our Booklet*



Rearwin Die Filing Machines



*Increases the Output
Decreases the Cost*

Does both large and small work. Any standard file 4" to 12" in length can be used. Stroke adjusted from 1" to 7". File releases on up-stroke. Shaft or motor drive gives rapid production and a uniform degree of clearance in your dies or other work where straight filing is required. Hack saws can be used for making templets.

Adjustable Speed Stroke & Table

*Descriptive circulars and
prices sent on request.*

W. D. Rearwin

341 Mill Ave., Grand Rapids, Mich.



The Well Known
H. G. Barr Line
of
Sensitive Drills

with one to six
spindles.

*Send for catalog
if interested*

Francis Reed Co.
43 Hammond St.
Worcester, Mass.

Save Time and Money With
T. & F. 3-Ft. Sensitive Radials
In Drilling, Tapping and Counterboring



THIS ultra-modern machine combines the conveniences of the radial and sensitive drilling machines—hence its great economy in drilling holes up to $\frac{3}{4}$ -in. in big, unwieldy pieces. When equipped with two heads it also counterbores and taps so that the work can be completed with one setting.

While thoroughly rigid in construction, it is the lightest machine of its type—easiest to handle, quickest to adjust. Many manufacturers have doubled and trebled their outputs with T. & F. Drilling Machines.

Our cost comparisons and production records speak for themselves. Send for your copies today.

The Taylor & Fenn Company
Hartford, Conn.

One Manufacturer

Increased His
Production

From 270 to 850 pieces per hour by using a Leland-Gifford Co. High Speed Drilling Machine.

Would you like to see what this machine looks like?

Send for Bulletin No. 502

Leland-Gifford Co.
Worcester, Mass., U. S. A.





FEATURES

Quick Change Speed
Change in 2 seconds

Most Efficient Drive
No belt troubles

Safety First
All parts protected

Heaviest Drill Made
Yet very sensitive

All Ball Bearings



Note The Drive

A straight shaft and one short, straight, endless belt—that's all, yet it makes belt troubles impossible on

The Sipp Quick-Change-Speed Drill

Speed instantly and easily changed; no twisting and stretching belt turning corners. Better work, more of it and less cost for labor and belts.

Write for details

The Sipp Machine Co.

Keen St.,

Paterson, N. J.



Henry & Wright Drilling Machines

with
1 to 8
Spindles
for $\frac{3}{4}$ "
Drills and
Smaller

Users of our older models told us they could not be improved upon. But we don't believe in standing still just because we are out in front. Our latest models, with gearless power transmission and frictionless bearings, are establishing new records of output in the largest drilling plants of the country, where they can't afford to guess at drilling economy. A plant having over 2300 drilling spindles—Henry & Wright spindles, by the way—can't be run on guess-work. And you can profit by their experience. Our 252 Varieties afford you the widest selection.

Particulars, and our Feed and Speed Chart, Free—Ask for Both

The Henry & Wright Mfg. Co.
760 Windsor St., Hartford, Conn.

Brown & Sharpe



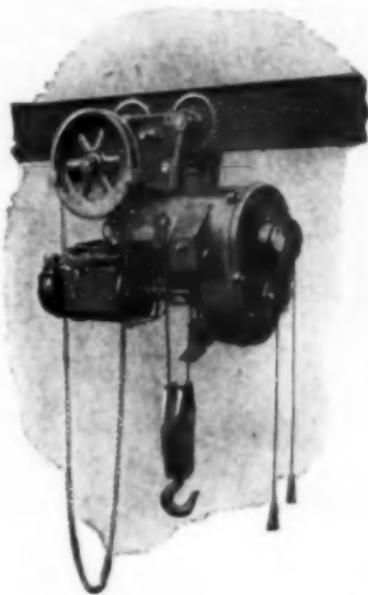
Coarse
Tooth
Milling
Cutters

Work Fast and Free
With a Minimum of Power

The wide spaced teeth take large, deep chips with little friction and heating, thus consuming less power and doing considerably more work between grindings than ordinary cutters. Having fewer teeth allows the cutting edges to be well backed up, increasing their strength and fitting them to handle deep and rapid cuts.

*Our Catalog Should Be in Your Hands
Send for it Today*

**Brown & Sharpe Mfg. Co.
Providence, R. I.**

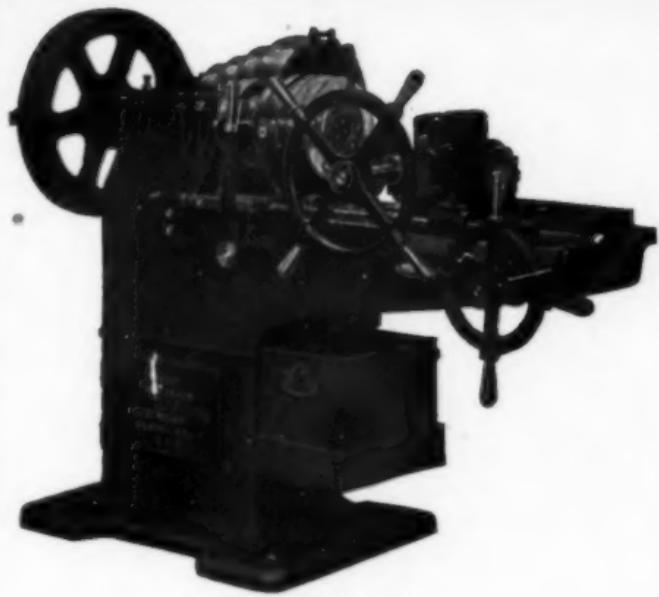


*A type "U" Hoist in your plant
will replace from 10 to 15
laborers—and it will pay for
itself in less than 90 days.*

*Built in sizes from $\frac{1}{2}$ Ton to
6 Ton capacity.*

We'll be glad to mail you Bulletin 301-BH and prices.

**PAWLING & HARNISCHFEGER CO.
MILWAUKEE** **WISCONSIN**



Reliance Bolt Cutters

Built in sizes $\frac{3}{4}$ inch to 6 inches, Single, Double and Triple, of the most up-to-date design. There is, also, a good reason why the "Reliance" is such a satisfactory machine for accuracy of threads cut, large production and low cost of maintenance, even in the hands of inexperienced labor. A lot of this reason is in the Opening Die Head, and we would like to tell you all about it. Interesting information for the asking.

The Foote-Burt Co., Makers
Cleveland, Ohio

Now is the Time to
Get Your Bar Stock in Shape



A New Year's Resolution:

"RESOLVED, that while we are counting our pipe, shafting and bars, we will assort them and pile them on."

The Handiest Racks

where we can keep them in small space, where we can quickly find what we want, where we can get at them easily—then *keep them that way.*"

The above is a mighty good resolution that will cost you little and save you much in space, time, fingers and toes.

May we describe and quote?

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The Wickes

Continuous Electric.
Sells at half the price. Uses half the current of others. Perfect prints up to 48" in width and of unlimited length.

Wickes Bros., Water St., Saginaw, Mich.

A Practical Pipe Bender

For 2-in. Pipe and Under



This is a hand-operated machine, adapted to the bending of almost any kind of work within its capacity. It is powerfully geared, and little effort is required to bend 2-inch pipe.

It is extensively used in railway shops, ship yards, car building plants, and wherever there is need of a convenient device of this kind. The adjustable stand permits its use between decks on shipboard.

A simple, durable, practical machine, which will commend itself to your good judgment.

*Do you want Pipe Bender bulletin?
—or complete Portable Tool catalog?*

Pedrick Tool & Machine Co.

3644 N. Lawrence St., Philadelphia, Pa.



**Electric
Blue Printing
Machines**

Buckeye Engine Co., Salem, Ohio

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If you are up against it for a certain machine to do a certain piece of work, let me design this machine for you. If you are not sure every machine in your plant is of the correct design to give you quality and maximum production, let us get together.

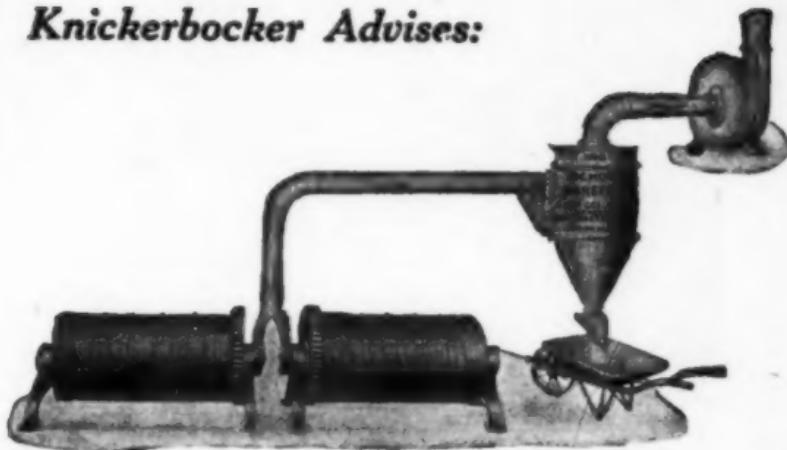
Production and quality bring dividends.

Production and quality is what you get when I design your machinery or tools.

Designing, Improving, Drafting, Blue-printing, Manufacturing, everything from the conception of the idea to the completed machine. Write for further details.

R. G. Clyne, M. E.
Columbia Bidg., St. Louis, Mo.

Knickerbocker Advises:



Put Out Dust—Put In Health

— In the Most Economical Way —



THAT MEANS the installation of the Morse "Rarefied" Dust Collector, which is making good in many of the biggest plants in the country, and is being endorsed right along by that most welcome of all testimonials—*repeat orders.*

Being operated on the "rarefied" or partial vacuum principle, the air is drawn through the collector, not pushed through as in old style machines. The dust is collected and automatically discharged before the air reaches the fan, preventing the abrasion of fan parts, and prolonging its life indefinitely.

With the Morse you obtain efficiency, economy and better health. Write for our Booklet today.

The Knickerbocker Company
Jackson, Michigan



SWEETLAND Lathe Chucks

*Catalog
No. 10-C
Upon
Request*

Wherever used Sweetland Lathe Chucks make friends. They are dependable. No fear of spoiling the work at the last minute for they do stay gripped. Send for the new illustrated Catalog No. 10-C. It gives the details.

The Hoggson & Pettis Mfg. Co.
New Haven, Conn., U.S.A.

SKINNER

Independent Lathe Chucks

Iron and Steel

Fig. 900

Fig. 1900

Bodies

With Solid Reversible Jaws
Hardened Steel Bearings



For High Speed Work

The last word in chuck construction.

Wide jaws; hardened steel thrust bearings; adjusting screws of large diameter, threaded full length; jaws ground after hardening, etc.

*Descriptive matter and new prices on request—
Write us today*

The Skinner Chuck Company

Factory and Main Office, New Britain, Conn.

New York Office
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We manufacture a great variety of
Lathe Chucks, Drill Chucks, Centering Chucks
Also
Portable Jaws for Lathe face plates and Machine tables.

Let us send you our Catalog

The Cushman Chuck Co.
Established 1862 Hartford, Conn.

The Jacobs **Improved Drill Chuck**



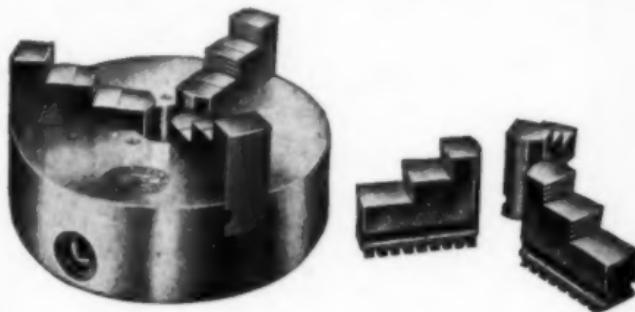
Patented Sept. 16, 1902

Manufactured by

The Jacobs Manufacturing Co.
Hartford, Conn., U. S. A.

Union All Steel Geared Scroll Chucks

Meet the Demand for an Espe-
cially Strong Universal Chuck



For modern turret machinery, or any of the modern "heavy duty" machines, something stronger than the ordinary iron body chuck is demanded. The Union All Steel Scroll Chucks will stand any strains. All parts are of the best material and well designed.

Other styles of chucks with steel body are the Four Jawed Independent and the Scroll Combination Chucks.

Write us for information

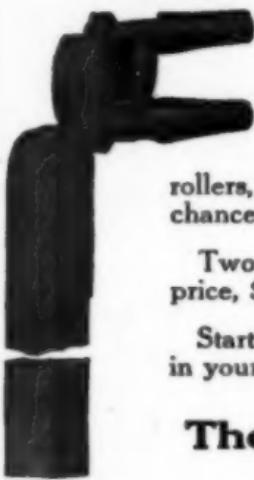
Union Manufacturing Co.

New York Office,
26 Cortlandt St. New Britain, Conn.

Makers of a Complete Line of Chucks

The Best Way—Because Safe

"Safety First" Belt Sticks Prevent Accidents



It's good business to eliminate every chance for a smash-up—big or little. Putting belts on moving pulleys is made safe by the use of our "Safety First" Belt Stick. With three rollers, two of them tapered, there is no chance for the hook to get caught.

Two sizes, 1 to 4" and 4 to 6", at one price, \$1.25 each or \$12 a dozen.

Start the New Year right by sending in your order at once.

The Ready Tool Co.
Bridgeport, Conn.

Machine Tool Makers

should investigate carefully the facilities offered by **Hitchcock's Machine Tool List** for reaching this trade in all parts of the country. Its circulation is specialized to completely cover *every line of manufacture* in which machine tools are used—as well as all railroad and other tool-using shops—with a thoroughness and effectiveness not equalled by any other advertising medium.

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This department is exclusively for those desiring machine, press or die work on contract. Advertisements must be set in uniform style, as shown, and without other display, or any variation in arrangement or in kind or size of type. The heading must express, as nearly as possible, the particular sort of work wanted, in order that any facilities offered may be easily found. Rates: one-eighth page, three months, \$12; one year, \$40.

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We have complete facilities for stamping, drawing and forming of sheet metal. Our presses are best suited for medium and large size stampings. We are equipped for baked enameling, spot and acetylene welding. Send us sample, sketch or blue-print for estimate. **The New Britain Machine Co., New Britain, Conn.**

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Let us estimate on your requirements. We have skilled men and first-class shipping facilities. **The Smith & Winchester Mfg. Company, South Windham, Conn.**

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We are equipped to render satisfactory service on all kinds of general machine work. No job too big or too difficult. Established 1876. **Chicago Die & Machine Works, 415 N. Carpenter St., Chicago, Ill.**

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Right prices. Prompt deliveries. High-grade work. Send us samples or blue-prints for quotations. **Hill Pump Valve Co., Archer Avenue, Canal & 23rd Sts., Chicago, Ill.**

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Castings of every description made in brass, bronze or aluminum. Brass finishing, screw machine and punch press products. Polishing and electro-plating. We are fully equipped to furnish complete brass and metal parts of every description.

Kelly Brass Works, 226-232 W. Ontario St., Chicago, Ill.

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Inventions Perfected

Years of experience in this work enable me to render you a satisfactory service. Special and automatic machinery a specialty. R. D. King, Consulting Engineer, 519 Monadnock Bldg., Chicago, Ill.

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Special brass work of every description, metal patterns and screw machine products. With a well-lighted shop, good tools and good mechanics, we believe we can satisfy you with our service. B. W. Pokorney & Co., 132-134 S. Clinton St., Chicago, Ill.

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Gray Iron Castings. Real Quality.

Concord Gray Iron Castings, heavy, medium and light, are made strictly according to chemical analysis. Quality and service are guaranteed to be unexcelled. We specialize in Machinery Castings. Write us today, or better still, send us some of your patterns for trial order. The Concord Foundry Company, Elkhart, Indiana. Detroit Representative, E. F. Wilkinson, 393 Vinewood Ave.

Gray Iron, Brass and Aluminum Castings. Skilled Pattern Work. Nickel Plating and Sheet Metal Work.

Let us estimate on your light and heavy gray iron, brass or aluminum castings, pattern work, nickel plating, sheet iron work and light sheet iron stamping. Reliable factory conditions, and best shipping facilities. H. W. Clark Co., Mattoon, Ill.

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Rockford Metal Specialty Co., Rockford, Ill.

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Metal Stampings, Screw Machine & Turret Lathe Products

Reliable company with modern plant and equipment can give your work prompt attention. Brass work a specialty. Excellent facilities for handling quantity orders complete in brass castings or rod. Brass or nickel plated finish. Manufacturers, Contract Division, P. O. Box 387, Marshalltown, Iowa.

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We have a very complete outfit of modern machinery and a force of highly skilled workmen which we could make available part of the time for outside work. We would like to get in touch with reliable concerns desiring to contract for accurate machine tool work. **Campbell Electric Company, Lynn, Mass.**

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We are equipped to manufacture high grade specialties and intricate machines, such as typewriters, adding machines, etc. Can improve a defective design, producing a machine that will work and sell. We especially desire problems of this kind. Large facilities for small stampings. **Grand Rapids Brass Co., 66-90 Scribner Av., Grand Rapids, Mich.**

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Every kind, for which we have the machinery and skilled labor to produce results. We are equipped also for special machine work. Our particular specialty is high grade service. Can you use that kind? **Manhattan Brass Works, Grand Rapids, Mich.**

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There are orders awaiting you, if you will let it be known just what you are prepared to furnish, so that users of such products may know that you are open to make contracts. The circulation of the Machine Tool List covers the entire country, is exclusively among people who make things in metal, and so thoroughly covers your market, whether it be large or small, as to make this department the logical place for such announcements. It is reasonable in cost, and gets to the right people. **A. H. Hitchcock, Publisher, 1220-1235 Caxton Bldg., Chicago, Ill.**

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We solicit your inquiries for light sheet metal stamping and manufacturing of specialties. **O. D. Johnson Stamping Works, Batavia, N.Y.**

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Exceptional facilities for making dies and tools and building machinery. **Titchener Iron Works, Binghamton, N.Y.**

CONTRACT WORK WANTED

Dies, Gauges, Jigs and Fixtures

Model and experimental work; special machinery built to order; contract manufacturing. Finished parts, of intricate shapes, accurately produced from electrolytic copper. A. N. Van Deman, 95 William St., New York City.

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Screw machine products. Efficient service and prompt deliveries. Send us your blueprints for quotations. Commercial Motor Car Co., Inc., Owego, Tioga County, N. Y.

Want Orders for Die Casting?

This is the place where you can offer your facilities to users of metal products everywhere in the United States. Many readers of the Tool List are in the market for die castings, and they would welcome information as to what you can do for them.

General Machine Shop and Foundry Work

Fifty years' successful operation our record. We have a large and well equipped machine shop, also foundry. Plenty skilled labor. Can handle large and small work. Would like contract for a number of large machines, also for automobile parts and other machinery. Southern Engine & Boiler Works, Jackson, Tenn.

Work for Your Idle Equipment

You can get it, if you will let manufacturers know just what you can do. Tell them through this department. The cost is small; the distribution covers the metal manufacturing people everywhere in the United States.

Lathe Work, Pipe Threading, Forge Work, Etc.

Machine work for lathes; cutting and threading pipe up to 18"; sheet iron and heavy plate work up to 1"; boilers, tanks, smoke stacks, etc.; also oxygen welding and cutting, and work for electric drill and hammer. Good facilities, low labor cost, prompt service. F. O. Ambrose, 111-113 N. Main St., Janesville, Wis.

Pressed and Stamped Steel Parts

It will pay you to let us figure on such pressed, stamped or drawn metal articles or parts as you may require, be they made of steel, aluminum, brass or copper. Our 15-acre plant at your disposal. Get the benefit of our "Knowing how since '81". Send samples or blue prints for estimate. Geuder, Paeschke & Frey Co., Milwaukee, Wis., 1325-1700 St. Paul Av.

Do You Want Contract Work?

If so, state in one of these spaces what you are prepared to do, and it will go into more manufacturing plants than if published in every mechanical journal in this country. The cost is low for a service covering metal-working plants of all kinds everywhere in the United States. A. H. Hitchcock, Publisher, 1220-1235 Caxton Building, Chicago.

Want More Orders?

They are to be had for special contract work in machining, stamping, forging, casting, welding or any department of machine manufacturing. The problem is merely to bring the capacity and the demand for it together. If you have the idle capacity, and want work for it, the "Contract Work Wanted" department of the Tool List will help you to get in touch with machine-making plants everywhere in the United States. Its circulation among American metal working plants is country-wide. There is no other available means by which you can reach so many.

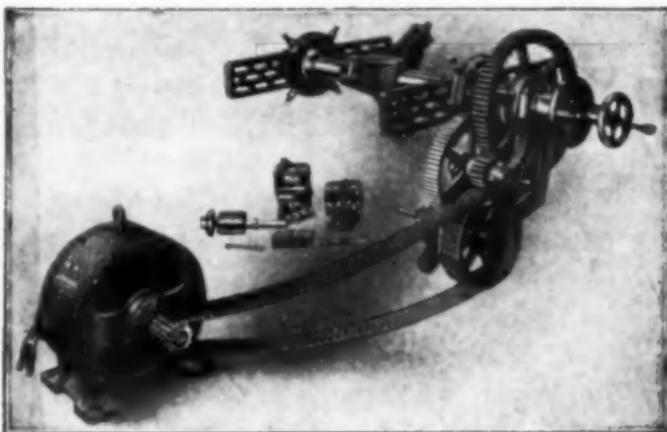
Don't let your equipment stand idle. That costs money—a lot more than it will cost you to find work for it. Write me for further information, and for a copy suggestion, which I shall be glad to make without cost or obligation.

A. H. Hitchcock, Publisher

Hitchcock's Machine Tool List
1220-1235 Caxton Building, Chicago, Ill.

Motor Driven Boring Bar

Often Returns Its Cost on One Job



IT IS READILY operated in a space which allows the taking of the piston out of the cylinder, and repairs in many cases are effected in the time ordinarily needed to disconnect the parts. Bores all kinds of engines, pumps, air compressors, steam hammers, valve seats, etc., with machine shop accuracy. As it bores in any position, lots of valuable time is saved.

The Boring Bar shown above is driven with motor and silent chain, and we can make special sizes to fit your work. Our line of Portable Tools and Labor Saving Devices at present includes:

Millers; circular planer tools; radius planers; rotary planers; machines for truing eccentrics, facing domes, arms for facing cylinder flanges; rotary flue cleaners; armature and axle bearing borers; pipe benders; locomotive cylinder borers; boring bar for lathe work; crank pin turners; reflex water glass grinders; rail saws; motors, etc.

Send for our Catalog—it tells of Economy

H. B. Underwood & Company

1016-22 Buttonwood St., Philadelphia, Pa.

Second-Hand Machinery.

Lists of Second-Hand Machinery, either for sale or wanted, set in uniform style, will be published under this heading at the rate of **40 cents a line**, across the page, each issue. Minimum charge, **\$4.00**. Sub-headings are counted as one line, but the name and address of advertiser are not included in the space charged for. No display in this department.

Write directly to the parties offering the machines for sale for prices and full descriptions. If you do not find listed what you require, use the post card inclosed with each book to make known your wants to the publisher.

FOR SALE BY

Clark Machinery Co.,

Blower, No. 1 Root, positive pressure.
Compressor, 10x12 Chicago.
Lathe, 48"x24" Enterprise, c. r.
Lathe, double head key lathe.

1302 Ontario Ave., Cleveland, O.

Magnetic separator, No. 1 Ding.
Miller, double end valve.
Miller, vertical, table 22x54.
Riveter, #7 Shuster.
Screw machine, 24" Cleveland auto.

FOR SALE BY

The Fulton Tool Company,

FUEL SYSTEM.

Pulverized coal fuel system for forge shop, complete with coal pulverizer. Capacity 18 to 25 heating furnaces. This system is now in successful operation at our Canal Fulton shops, and is offered for sale on account of the removal of our plant to Huntington, W. Va. Address inquiries to The Fulton Tool Company, Canal Fulton, Ohio.

Canal Fulton, Ohio

FOR SALE BY

Neidow & Payson Co.,

Automatics, 1" to 2".
Boring and turning mills, 41" to 100".
Borer, 2-spindle cylinder.
Cold saw, 36" blade.
Drills, multiple spdl. and sensitive.
Gear hobber, 18" Grant-Lees.
Gear cutters, G. & E. and B. & S.
Grinder, 10"x36" Landis.
Hammers, steam, 600 to 3000 lbs.
We can ship heavy duty Lathes, 26" to 42" swing, any length, in 30 days.

9 So. Clinton St., Chicago, Ill.

Hammer, board, 1200 lb. B. & S.
Lathes, 9" to 90" swing.
Lathes, 2" and 3" J. & L.
Miller, No. 3 Brainard plain.
Miller, P. & W., spline.
Miller, 72"x48"x10", slab.
Planers, 26" to 72" wide.
Press, screw, pwr., No. 2 Amer. Can.
Press, 200 ton Niles car wheel.
We can ship heavy duty Lathes, 26" to 42" swing, any length, in 30 days.

FOR SALE BY

Western Mchy. Co., —C. H. Norton— 12 W. 3rd St., Cincinnati, O.

LATHES.

22"x16' Schumacher & Boye, c. r.
21"x 8' Bradford-Mueller, c. r.
18"x 6' Lodge & Shipley, q. c. g.
42"x11' Lodge & Shipley, c. r.

20"x 8' LeBlond, 3 s.c., d.b.g., q.c.g.
20"x10' Pratt & Whitney.
11"x 4' Barnes, new.
8"x5' Barnes.

SHAPERS AND MILLING MACHINES.

26" Smith & Mills, shift. belt.
16" Steptoe, crank, b. g.
Drill, 48" Niles, sliding head, b. g.
Gas engine, 6 h. p.
Gear planer, 36" Gould & Eberhardt.
Generator, 7½ k. w., Triumph, 110 v.,
and board.

No. 3 Becker-Brainard full automatic universal.
Grinder, Gisholt, wet tool.
Lathe, for boring lathe spdl's 20"x8'.
Miller, Reed, Lincoln.
Radial drill, 4' Niles.

MISCELLANEOUS.

SECOND-HAND MACHINERY

FOR SALE BY

The H. A. Stocker Machinery Co., 566-72 W. Randolph St., Chicago

Immediate Delivery.

BORING MILLS.

- 40" Fitchburg horizontal.
42" Gisholt, one turret and one swivel head.

DRILLING MACHINES.

- 21' Dreses radial.
21' Hilbert radial.
33' Industrial radial.
Avey, 1-spindle, b. b., (new).
Fox, 4-spindle.
Avey, 4-spindle, b. b.

- 82" Niles, car wheel boring mill.
60" Bement, horizontal.

GEAR CUTTERS.

- 30"x9" Gould & Eberhardt automatic for spur and bevel.

- 24"x7" Gould & Eberhardt for spur.
36" Walcott, for spur.

- 14"x20" B. & S., plain.
Gisholt tool grinder.

GRINDERS.

- No. 5 Diamond, water tool.

LATHES.

- 12"x 5' Davis, c. r.
14"x 6' Fairbanks, c. r., taper.
16"x 6' Prentice, c. r.
16"x 6' Sebastian, p. r.
16"x10' Greaves & Kiusman, c. r.
17"x10' Blaisdell, c. r.
18"x 6' Bradford, c. r., taper.
18"x 8' L. & S., pat. head, c. r., taper.
18"x10' Bradford, c. r., taper.
18"x12' Barker, c. r.
20"x10' Flather, c. r.

- 20"x14' Blaisdell, c. r.
21"x12' New Haven, c. r.
21"x12' Bradford, c. r., taper.
24"x13' New Haven, c. r.
30"x27' Reed, c. r., taper.
32"x16' Blaisdell, c. r.
36"x22' Lodge & Shipley, geared head, q. c. g., motor drive with motor.
68"x20' Fifield, c. r., t. b. g.

MILLING MACHINES.

- No. 3 Cincinnati vertical, constant speed drive.
No. 3 Kempsmith universal.
No. 4 LeBlond plain.

- No. 13 P. & W., Lincoln.
No. 4-B Becker vertical.
No. 5 Becker vertical.

PLANERS.

- 22"x22"x 4' New Haven.
30"x30"x12' Cincinnati, two heads.
36"x36"x12' Powell, single head, arranged for two.

- 36"x36"x16' Sellers, one head.
40"x40"x12' New Haven, one head, one side head.
40"x38"x14' Putnam, one head.

PRESSES.

- No. 174 Consolidated, double crank.

SHAPERS.

- 16" American,
16" Cincinnati.

SCREW MACHINES.

- 1 3-16" Hartford automatic.
2" Cleveland automatic.
2" Cleveland automatic.

- 2" Cleveland automatic.
1" B. & S. plain.
16" P. & W. plain.

TURRET LATHES.

- 16" Lodge & Shipley.
25" Niles.
No. 2 Warner & S., hollow hexagon.
2"x24" Jones & Lamson.

- 24" Gisholt, spindle capacity 6".
3"x36" Jones & Lamson chucking outfit.
2x24" Jones & L., bar equipment.

MISCELLANEOUS.

- Bolt cutter, 1 1/2" Acme.
Centering machine, No. 1 Whiton.
Cold saw, No. 3 Burr.
Cold saw, No. 14 Higley.
Hammers, 100 lb. Bradley helve.

- Keyseater, No. 2 Baker.
Oil separator, No. 2 National.
Rivet spinner, No. 80-A Grant.
Rivet spinner, Stecher.

Write for our Stock List.

SECOND-HAND MACHINERY

FOR SALE BY

A.D. White Machinery Co., - 108-114 N. Jefferson St., Chicago

NEW MACHINES.

In stock for immediate delivery:

- 13"x8' Lancaster engine lathe.
- 14"x6"-8' Carroll-Jamieson engine lathes, (8).
- 16"x6' Canedy-Otto engine lathes.
- 18"x8' South Bend lathe.
- 18"x8' Mueller d. b. g., quick change lathes, (5).
- No. 14 Valley City plain milling machine.
- No. 14 Valley City universal milling machine.
- No. 14 American plain milling machines, (3).
- U. S. hand miller.
- 20" Lindgren all-gearred drill presses, (4).
- 2, 3 and 4-spindle style "A" Barr sensitive drills.
- Waterbury surface grinders.
- LaSalle surface grinders.
- LaSalle and Farnes twist drill grinders.
- 24" Kelly back geared shaper.

SECOND-HAND MACHINES.

SCREW MACHINES.

5-16" LaVigne.	1" Cleveland, friction jigger feed.
7-18" Cleveland, friction fd.	14" LaVigne, (4).
8" Cleveland, friction fd.	2" Hartford.
11" Cleveland, friction fd.	24" Hartford.
14" Cleveland, jigger feed.	1" Cleveland, semi-automatic.
1" Hartford, (2).	1 5-16" Dreses, hand.

ENGINE LATHES.

16"x12' Beaman & Smith.	28"x25' Putnam.
24"x10' Putnam, (2).	30"x14' Blaisdell.
28"x12' Fifield.	36"x20' New Haven.

DRILL PRESSES.

20" Barnes.	36" Bickford plain radial.
28" Barnes, sliding head.	60" Dreses, semi-univ. radial.
28" Bickford, sliding head.	2 spdl. Rockford.
30" Kerkhoff, sliding head.	2 spdl. Henry & Wright high speed.
32" Bickford, sliding head.	8 spdl. Valley City mult., No. 2 taper.
34" Barnes, sliding head.	12 spdl. Bausch multiple, No. 2 taper.

MILLING MACHINES AND PLANERS.

No. 4 LeBlond plain miller.	32"x32"x 8' Betts, one head.
No. 2 Garvin sprocket miller.	35"x35"x12' Niles, two heads.
No. 6 Whitney, hand miller.	36"x36"x10' Gray, two heads.

PUNCH PRESSES.

No. 4 McDonald, o. b.	No. 29 Bliss, gang, dbl. action.
No. 18 Bliss, o. b. i., (2).	No. 100 Crosby gang, 30" bet. uprights
No. 21 Bliss, o. b. i.	150-ton Sellers 36" hy. wheel press.

GRINDING MACHINES.

18" Ransom, disc.	14" Bridgeport floor grinders, (2).
Yankee Style "B", drill.	2" No. 7 Sterling floor grinder.
3-spndl. valve grinder.	2" Springfield dbl. wheel floor gr.
No. 6 Diamond floor grinder.	Springfield dbl. wheel, water.
14" Norton floor grinders, (2).	No. 2 Leland & F. water grinder.

MISCELLANEOUS.

Blowers, No. 3 & 5 Root.	Saw, cold, Bryant, 19 $\frac{1}{2}$ " dia. saw.
Bolt cutter, 14" National, s. hd.	Saw, cold, No. 54 Nutter-Barnes.
Boring machine, Binsse, 34" bar.	Saw sharpeners, Nutter-Barnes, (2).
Hammers, 40 & 60 lb. Bradley, cu. hlv.	Saw, Williamson, tilting band.
Keyseater, 36" Morton portable.	Shaper, 16" Smith & Mills.
Oil gas generator, No. 3 American.	Shear, slitting, No. 380 Toledo.
Punch, Wms. & W. 36" throat, 1" cap.	Tapper, 6-sp. No. 6 Bement, grd.
Riveter, 4" Shuster.	Tapper, Newton, pulley.

SECOND-HAND MACHINERY

FOR SALE BY

**Simmons Machine Co., Inc., 981-985 Broadway, Albany, N. Y.
New York Office, 902 Singer Building**

NEW MACHINERY

GRINDERS.

Dunmore portable ex. & int.(6)	\$ 75.
W. & M.. Drill, style W. P. L.	160.
18" double disc, with 2 extra discs, and press complete	300.
No. 6 Stand.univ.tool & cutter,	360.
Greenfield tool and cutter. (15)	400.

MILLING

United States hand miller	\$ 250.
No. 1 Standard hand millers.(2)	250.
No. 1 Bickford hand millers.(3)	300.
14 Valley City, plain, complete	850.
No. 1 Dow, plain millers. (5)	900.
No. 24 Osterlein, 6 wks'delivery	1075.

DRILLS AND RADIAL DRILLS.

No. 28 Canedy-O. sens. 2" cap.	\$ 25.
14" Heckman sensitive	60.
20" Canedy-Otto, power fd.(6)	105.
20" Canedy-Otto power feed, tapping attachment (2)	125.

LATHES.

13x6 So.Bend.h.s.,c.r.,p.c.f....	\$ 265.
13x6 Seneca Falls, c. r., comp.	425.
14x6 Neat, d. b. g., c. r., p. c. f.	525.
16x6 Advance, q. c. g., d. b. g..	680.
14x6 Hamilton,p.c.g.,comp.(2)	675.
18x8 Cisco, q.c.g.,c.r.,comp.(3)	800.
16x6 Hamilton, q.c.g.,comp.(2)	800.

MISCELLANEOUS.

Cold saw, 20" Lee-Simplex, 8" cap. round, with saw grinder	\$ 900.
Forge, No. 300 Tiger, blower and hood	25.
Hack saw, power, No.1 Racine	100.
Screw mch., hand, No. 3 Foster pl.,long.fd.to cut-off slide	575.

USED MACHINERY

PLANERS.

24x24x5 Pond, perf. condition.	\$ 400.
26x36x7 Pond, perf. condition.	625.
30x30x8 Wilson, heavy, perfect condition	1150.

GRINDERS.

Waterbury surface grinder.....	\$ 30.
16x36 Bridgeport pl.like new(3)	650.
8x30 Walker surface perf.cond.	725.

TURRET LATHES AND

Pratt & W., 17-32" hole, dbl. cutting-off slide, complete	\$ 275.
No. 2 Pratt & W. screw mch.	375.
J. & L. 2x24 turret,cone hd.(3)	450.
Potter & J. semi-auto. 3" h. s.	650.

MILLING MACHINES.

P. & W. Lincoln,perf.cond.(25)	\$ 100.
No. 284 Bement Lincoln, perf.	200.
No. 7 Becker-B. Lincoln, (2)	475.
14-48 Bement-Niles slab miller.	650.

BORING

30" Baush vertical turret head, motor drive, (2)	\$1000.
42" Bullard, excellent cond.	2000.

MILLS.

60" Betts vert.perf.cond.motor	\$2300.
84" Cincinnati vertical motor drive, complete	7000.

SECOND-HAND MACHINERY

Simmons Machine Co., Inc.,—Continued

DRILLS AND RADIAL DRILLS.

12" Gordon & Son sens., $\frac{1}{2}$ " cap.	30.	3' Prentiss plain radial, perfect	\$ 500.
2-sp. Fulton No. 2 sens., $\frac{1}{2}$ " cap.	60.	6' Fosdick pl. radial, tap. att...	1250.
2-sp. Pratt & Whitney upright	70.	Bickford 4' radial single pulley	
4-sp. Dwight-Slate sens., (2)...	120.	drive, tapping attachment....	1250.

LATHES.

12" x $\frac{5}{8}$ ' Barnes, hol. spdl., s. r., screw cutting, chuck.....	\$ 75.	22x14 Fifield, c. r., p. c. f., complete with grinding attach....	\$ 650.
10x5 Seneca Falls, h. sp., screw cutting, chuck, raising blocks	130.	40x14 Harris, c. r., p. c. f., complete with large face plate....	800.
12x5½ Barnes, s. r., h. s., screw cutting, turret on shears	165.	20x8 LeBlond c. r., p. c. f., h. s., 5-step cone, complete.....	800.
No. 3½ Stark precision, compound slide rest.....	250.	20x8 Walcott, c. r., p. c. f., 16"chk.	900.
28x10 Ames p.c.f., complete (2)	290.	20x8 Walcott, c. r., taper attachment 16" chuck, ex. cond.	1025.
13x6 Seneca F., pan b., c. r., h. s.	425.	32x12 Draper c. r., h. s., p. c. f., extra heavy.....	1500.
18x8 Pond c. r., p. c. f. comp. (3)	470.	66x16 Pond, c. r., p. c. f., h. s., 5" belt, complete.....	2000.
18x12 Lodge & Davis, c. r., h. s., p. c. f., complete	500.	32x24 LeBlond heavy duty c. r., complete, like new	3000.
14x10 American, q. c. g., c. r., h. s., taper attachment.....	600.		

MISCELLANEOUS.

Automatics, 4-sp., 1" National		Press, No. 68-N Bliss, double acting, like new.....	\$ 550.
Acme, complete, (2).....	\$ 700.	Shaper, 15" Steptoe perf. cond.	400.
Bridge reamers, high-speed, 1 lot, all sizes, 20% off list.		Shaper, 24" Gould & E.	650.
Centering machine, McCabe...	50.	Shaper, 28" Ohio, like new....	700.
Grinder, wet, Springfield.....	40.	Thread miller, Holden Morgan	400.
Keyseaters, No. 2 Davis, perf.	150.	Wheel borer, Putnam, fine cond.	300.
Press, punch, No. 55 Bliss.....	225.		

FOR SALE BY

Strong & Hery Co.,

In stock for immediate delivery.

LATHES (NEW).

9x12 Porter-Cable.	16x8 style "A" Hamilton, (2).
13x6 Worcester, (4).	18x8 Mueller.
14x6 Style "A" Hamilton tool room lathes, (2).	20x10 P. C., c. r.

TURRET LATHES.

21" style "H" Gisholt, taper att. (2).	2" x 24" J. & L. flat turret.
	BENCH MILLER.

Sloan & Chace, new.

BENCH LATHES.

A variety of new and used bench lathes with collets.

GRINDERS.

No. 1 cutter and reamer, new, (2).	No. 1 Wilmarth & M. surface, new.
7x32 Norton plain, (2).	3-16 to 2x2 internal, water att., new.
16x36 Bridgeport plain, (2).	

SHAPERS.

Double head traveling head Bement-Miles.	
10" single head traveling head Pratt & Whitney.	
16" double head traveling head Bement.	
32" triple geared shaper, new.	

BORING MILL.

84" Cincinnati, like new.

MILLING MACHINE.

No. 2 Cincinnati plain.

DRILL PRESSES.

3-spindle Avey, like new.

36" sliding head Aurora, b. g.

24" sliding head Aurora, b. g.

SCREW MACHINES.

No. 2 B. & O., new, (2).

18" B. & O., new, (2).

1" Pierce, new.

No. 4 Foster.

SECOND-HAND MACHINERY

FOR SALE BY

New York Machinery Exchange, 50 Church St., New York City

PRESSES.

- No. 60¹ Bliss reducing rack and pinion movement, 4" to 42" adjustable stroke, weight 12,500 lbs. each; practically new; less than year old. (9).
No. 65A Consolidated geared arch press, 5" stroke, weight 11,000 lbs.
Toledo double crank b. g. forging press, 2" stroke, weight 28,000 lbs.
PG-6 Ferracute geared punch press, 1 $\frac{1}{2}$ " stroke, weight 12,100 lbs.
No. 2 new Bliss straight sided double crank press, 2" stroke, wt. 5,000 lbs.
No. 69 Bliss inclinable press, 7 $\frac{1}{2}$ " stroke.
Howard knuckle joint press, 1 $\frac{1}{2}$ " stroke.
Farrell double crank geared press, 2" stroke.
No. 4 Farrell punch press, 1 $\frac{1}{2}$ " stroke.
No. 1 Bliss straight sided press, 8" stroke.
Fowler press, 1 $\frac{1}{2}$ " stroke.
No. 3 Manville stamping press, 1" stroke.
No. 225 Adriance press, 2" stroke.
No. 3 Adriance inclinable press, 1 $\frac{1}{2}$ " stroke.
No. 2B Brown press, 1 $\frac{1}{2}$ " stroke.
Hoe & Co. 350-ton hydraulic press, pump and water tank.
100-ton Sellers hydraulic wheel press, 8" bore.

PUNCHES—SHEARS—ROLLS.

- Sellers & Co. double angle shear, steam driven, engine attached, capacity 8"x 8"x 1", weight 41,000 lbs.
Hilles & Jones double angle shear, capacity 6"x 6"x 1".
Pels & Co. beam shear "T-40."
6' Lennox rotary splitting shear, 1" capacity.
8' Lennox rotary splitting shear, 1" capacity.
Bement plate iron shear, 26" throat.
No. 4 Niles single end punch and shear, 31" throat, 1 $\frac{1}{2}$ " stroke.
Reade Cleveland combined punch and shear, 28" throat, capacity 1" in 1".
D. F. Heinss double end punch & shear, 12" and 21" throats, 1 $\frac{1}{2}$ " stroke, capacity 1" in 1".
Bass double end punch and shear, 20" throats, capacity 1 $\frac{1}{2}$ " in 1".
McDougall double end punch and shear, 15" throats.
General Engineering Co. multiple punch, capacity 72" between housings.
No. 3 Hilles & Jones combined punch and shear, 1 $\frac{1}{2}$ " stroke, 22" throat.
Kling Bros. punch, 24" throat, 1 $\frac{1}{2}$ " stroke.
Cockburn punch, 2" stroke, capacity 1" in 1".
Bement punch, 31" gap, capacity 2" in 1".
Coping machine, 3" stroke, cope 24" I beams, approx. weight 11,000 lbs.

BORING MILLS.

- 10'-16' Niles vertical, two heads.
10' Betts vert., 2 heads, chasing att.
66" Betts vertical, two heads.
60" Niles vertical.
60" Baush vertical, two heads.
60" Bement vertical.
Niles horizontal, 9 $\frac{1}{2}$ bar.

- Barrett horizontal, 31" bar.
Betts horizontal, 24" bar.
Rockford horizontal, 2 1-16" bar.
50" Bement-Miles car wheel boring mill.
Underwood new cylinder boring mill, 38" bar.

RADIAL DRILLS.

- 6' Dreses universal.
6' Niles semi-universal, (3).
5' Western full univ., motor attached.
5' Box radial.
5' Bement-Miles plain.
4 $\frac{1}{2}$ ' Bickford plain, gear box drive, tapping attachment.

- 3 $\frac{1}{2}$ ' Niles plain.
3 $\frac{1}{2}$ ' Baush plain, (2).
3 $\frac{1}{2}$ ' Gang plain, (2).
3' Universal Drill Co. plain.
2 $\frac{1}{2}$ ' Gardam plain.
2 $\frac{1}{2}$ ' Prentice plain, (2).

MISCELLANEOUS.

- Grinder, vertical surface, 3' Pratt & Whitney, rectangular mag. chuck.
Grinders, surface, No. 2 B. & S., (2).
Grinder, internal, No. 1 $\frac{1}{2}$ Landis.
Grinder, internal, No. 1 B. & S.
Grinder, universal cutter and reamer, No. 3 Brown & Sharpe.
Lathe, 11 $\frac{1}{2}$ "x22' Pond, quadruple geared, face plate drive.

- Lathe, tire wheel, 72".
Lathe, double pulley, 63" Lodge-S.
Lathe, 48"x24' Enterprise.
Lathe, 42"x20' Putnam.
Lathe, 42"x14' Putnam.
Lathe, 38"x25' Fifield.
Lathe, 36"x22' Pond, triple geared.
Lathe, 36"x20' New Haven.
Lathe, 32"x25' LeBlond, q. c. g.

SECOND-HAND MACHINERY

New York Machinery Exchange—Continued.

MISCELLANEOUS—CONTINUED.

Lathe, 30"x30' Perkins, tri. geared.	Miller, univ., No. 1 Hendey-Norton.
Lathe, 28"x28' Fitchburg.	Miller, slab, Newton duplex, platen 121".
Lathe, 28"x26' Niles.	Miller, vertical, 76" Newton 48" rotary table.
Lathe, 26"x24' New Haven.	Miller, plain, No. 5 Kempsmith.
Lathe, 26"x16' American, single pulley drive.	Millers, plain manufacturing, Brown & Sharpe, table 9 $\frac{1}{2}$ "x19", (4).
Miller, full univ., No. 1 $\frac{1}{2}$ Cincinnati.	
Miller, slab, Ingersoll, adjustable rail, weight 55,000 lbs., 3 heads.	

FOR SALE BY

Fred C. Dickow - - - 33-35 S. Desplaines St., Chicago, Ill.

ENGINE LATHES.

13"x 5' Blaisdell lathe c. r. \$ 265. | 14"x 6' Blaisdell lathe..... \$ 200.

GRINDERS.

12"x30 Brown & Sharpe universal grinder, A1 condition.

14" internal grinders for ball bearings, like new, (2).

Tool grinders of all kinds.

MISCELLANEOUS.

Drill presses, 20", new, each... \$ 70.

Drill pr., 30", b. g., p. f., sld'g hd. 125.

Gear hobber, No. 1 Farwell, with
4 H. S. Hobbs, A1 condition.

Horn punch press, power hack saws, grinders, square shear, joiner, etc.

FOR SALE BY

Federal Machinery Sales Co. 8 N. Jefferson St., Chicago, Ill.

BORING MILL.

Bullard 24" vertical single head turret boring mill, geared feed, 3-jaw combination chuck, table.

DRILLING MACHINES.

2-spindle Henry & Wright high speed ball-bearing drill.

3-spindle Henry & Wright high speed ball-bearing drill.

4-spindle Kern high speed ball bearing drill.

20" Barnes drill, plain lever feed.

GEAR CUTTER.

24" Gould & Eberhardt, for spurs and bevels.

KEYSEATERS.

No. 1 Davis, with countershaft attached.

LATHES.

14"x 6' Sebastian gap lathe, hollow spindle, plain rest.

15"x 6' Bogart, hollow spindle, r. and f. rest, taper attachment.

16"x 6' Lodge & Shipley, q. c. g., hollow spindle, compound rest.

18"x 8' Lodge & Shipley, geared head, hollow spindle, compound rest.

20"x10' American (Challenge), q. c. g., hollow spdl., comp. r., taper attach.

20"x10' Reed, hollow spindle, compound rest.

26"x12' Monarch quick change gear, compound rest.

MILLING MACHINES.

No. 2 Hall & Brown plain miller.

No. 6 Bristol hand miller.

PLANERS.

18"x18"x40" Putnam, one rail head.

30"x30"x8" Whitcomb, one rail head.

36"x36"x8' Niles, one rail head.

PRESSES.

No. 1 $\frac{1}{2}$ Robinson inclinable (equivalent to No. 3 of other makes).

No. 4 American Can, motor driven, geared.

No. 31 Bliss, open back, plain, on legs.

AUTOMATIC SCREW MACHINES.

No. 2 Brown & Sharpe, 8" capacity, (5).

1" Cleveland, (3).

SECOND-HAND MACHINERY

FOR SALE BY

Enterprise Machinery Co.,

Engraving machine, Gorton... \$ 475.
 Grinder, 12"x42" Landis..... 1100.
 Lathe, 18"x12" Blaisdell, c. r.... 450.
 Lathe head, 36" face pl. c. s.... 85.
 Miller, hand, 9"x5"x3" Pond... 75.
 Miller, Brainerd, p. f., 8"x30" .. 375.
 Miller, vertical rotary attach.,
 heavy, little used..... 500.
 Planer, 42"x42"x15", 2 heads... 1200.
 Punch pr., straight side, 6000 lb. 350.

32-34 S. Clinton St., Chicago, Ill.

Punch press, pwr., new, guar.,
 4" stroke, wt. 140 lbs..... \$ 40.
 Punch, shear and rod cutters,
 new, power, 4" to 1", \$115 to. 290.
 Sc. mch's., No. 2 B. & S auto.,(8)
 Screw mch's., J. & L. (15) \$600 to 1200.
 Screw mch., Natl. Acme, 4-sp.,
 good cond.. 9-16", \$975.; 4".... 1075.
 Thread roller, Waterbury 4x2", 290.
 Over 500 other tools; write us.

FOR SALE BY

W. L. Perkins, Jr.,

16"x 6' LeBlond, plain rest, c. f.
 18"x 8' LeBlond, c. r., cross feed.
 18"x 8' Reed, comp. rest, cross feed.
 24"x24"x6' Gray, single head.
 36"x36"x12' Niles, four heads.

LATHEES.

20"x 6' Blaisdell, c. r., cross feed.
 20"x 8' Blaisdell, c. r., cross feed.
 20"x 8' Blaisdell, pl. r., cross feed.

PLANERS.

40"x40"x12' Putnam, single head.
 72"x72"x8' Sellers, three heads.

MISCELLANEOUS.

Car wheel boring mach., 42" Niles.
 Flat turret lathe, 2"x24" Jones & L.

Jib crane, 25' Whiting, steel.
 Punch, 60" Hilles & Jones No. 6.

WANTED BY

Morris Benjamin, - - - 212 Centre St., New York, N. Y.

5 Drill presses, 20-22-24" Barnes.
 2 Grinders, universal, Landis, Brown & Sharpe.
 10 Lathes, 10-12-14" of good make.
 2 Millers, universal, Cincinnati, Kempsmith or Oesterlein.
 10 Presses, power, equal to Nos. 18-19-20-21 Bliss.
 2 Radial drills, Bickford or Gang.
 5 Screw machines, Nos. 1-2 Garvin or Warner & Swasey.
 8 Shapers, 12-14-16", also 20-24" back geared.
 Leather belting, motors, dynamos.

FOR SALE BY

Brown-McDonald Machinery Co.,

906-908-910 North Market Street, - - - - - St. Louis, Mo.

LATHEES.

17"x8' Sidney, q. c. g.
 13"x6' South Bend, (new).
 14"x5' Putnam, s. s., p. r.
 14"x8' Fitchburg, s. s., p. r.

15"x 8' South Bend, new.
 16"x 8' South Bend, new.
 17"x8' Fifield, h. s., p. r.

DRILLING MACHINES.

Barnes, 4" capacity, single spindle.
 28" Aurora, b. g., p. g. f.
 New 20" Champion, w. & l., (3).

New 20" Champion, w. & l., back
 geared and power feed.

38" s. h., back geared, p. f.

PLANERS.

26"x26"x7' Whitcomb.

30"x30"x9' New Haven.

COMPRESSORS.

8x8 Star, sgl. cyl., dbl. a., belted.
 10x10 Star, with 10x10 vert. engine.

1160 cu. ft. Ingersol, steam, cpd. air.
 20x20x134" Norwalk, straight line.

MISCELLANEOUS.

Cold saw, Q. & C.
 Friction saw, Kyerson, motor driven.
 Hack saw, Atkins Kwik Kut.
 Hammer, helve, 60 lb. Knowlton.

Hammer, helve, Rochester, size B.
 Shaper, 14" Steptoe, crank.
 Slab miller, 48" Cincinnati.
 Steel brakes, 4' and 8'.

SECOND-HAND MACHINERY

FOR SALE BY

Henry Prentiss & Company, Inc., - Singer Bldg., New York
Formerly
Prentiss Tool & Supply Company.

BORING MACHINES.

No. 1 Beaman & Smith, double hd. | 5" bar Beaman & Smith horizontal.
37" Bullard vert. 2 heads. | No. 1 Springfield spindle borer.

DRILLING MACHINES.

24" Henry & Wright b. b., sens. 2-sp. Henry & Wright. 4-spindle Woodward & Rogers. 4-spindle Barr. 5-spindle Reed. 20" Prentiss Bros., sliding head. 25" Snyder, sliding head.	28" Snyder, sliding head. 36" Prentice Bros., upright. 4' Bickford plain. 5' American radial. 6-spindle Gardam adjustable. 12-spindle Gardam, adjustable. No. 4 Quint turret.
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GRINDERS.

No. 1 Norton univ., c. and t. No. 5 Rivett on stand. No. 4 Springfield, surface.	No. 6 Bryant internal. No. 2 Hartford surface. P. & W. vertical surface.
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LATHES.

11"x 6' Star, c. r., p. c. f. 11"x 5' Barnes, c. r., p. c. f. 16"x 6' Automatic threading. 16"x 8' National, c. r., q. c. 18"x 6' Reed, c. r., p. c. f. 18"x 8' Kahn-Carpenter, c. r., c.p. f.	18"x 8' American, c. r., q. c., t. a. 24"x 14' New Haven, c. r., p. c. f., t. a. 38"x 10' Harrington, c. r., p. c. f. 38"x 10' Harrington, c. r., p. c. f., ck. 38-50"x 14' Fifield c. r., p. c. f. 20-42"x 12' F. & S. gap, motor drive.
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MILLING MACHINES.

No. 3 Brainerd plain, vert. att. No. 5 Brown & Sharpe plain. No. 4 Cincinnati plain. No. 1 Cooper Bros. vert. die sinker.	Garvin duplex. Nos. 1 & 2 P. & W. hand. No. 5 Becker, vertical. No. 3 Reed plain.
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PLANERS.

15"x15"x 2' New Haven. 24"x24"x 8' Sellers.	24"x24"x 5' Whitcomb. 64"x48"x30' Pond.
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SAWS.

4" Espen-Lucas. No. 21 Lea Simplex.	Williamson, band. No. 1M Q. & C. power.
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SCREW MACHINES.

2" Cleveland automatic. 13" Gisholt. 18"x 7' Fay & Scott. 20" J. & L., single pulley.	4" Rivett, wire feed. 3" Cleveland automatic. 4" National-Acme. automatic. 14" Rivett, plain turret.
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MISCELLANEOUS.

Air compressor, 8"x8" American. Bending machine, 30 ton Watson Stillman. Broaching machines, Nos. 3 and 4 LaPointe. Gear cutter, 22" G. & E. Gear cutter, 26x10-Cincinnati.	Keyseater, No. 1 Davis. Pipe machine, 4" Saunders. Shaper, 16" Cincinnati. Shaper, 24" Hendey. Shaper, 24" Gould & Eberhardt. Tapper, 4" Baker Bros.
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SECOND-HAND MACHINERY

FOR SALE BY

McMullen Machinery Co.,

Automatics, 2" Cleveland, (2).
Compressor, 8x8 Bury horiz.
Compressor, 6x6 Curtis double.
Drill, 14" Washburn sensitive.
Drill, 23" Superior, power feed,
back geared, a. s., t. a.
Drill, 26" Barnes, sliding hd., power
feed, back geared, a. s.
Lathe, 18x10 Perkins h. s., c. r.
Lathe, 18x6 Barnes, h. s., c. r.
Lathe, 11x4 Pratt & W., speed.
Lathe, 11x4 Wells, speed.

Grand Rapids, Michigan

Planer, 24x24x8 Whitcomb.
Planer, 24x24x8 Lodge & Davis.
Punch & shear, No. 3 L. & A. double,
6" throat.
Punch & shear, No. 4 L. & A. single,
6" throat.
Riveter, 2" Shuster.
Saw, Millers Falls, hack.
Saw, Q. & C., hack.
Screw mach., 2" Oliver, w. f., a.c.p.f.
Shaper, 14" Steptoe, plain.

FOR SALE BY

Badger-Packard Mchy. Co., 72-74-76 W. Water St., Milwaukee, Wis.

DRILLING MACHINES.

14" Mechanics, lever feed, round
base, (2).
14" Excelsior sensitive, lever feed,
round base.

20" Barnes, lever feed.
22" Barnes, b. g., belt power feed.
3-sp. Henry & Wright, ball bearing,
4-spindle Sigourney.

LATHES.

24"x12' Perkins, compound rest,
solid spindle, countershaft.

9"x4' Star No. 10-E.

MISCELLANEOUS.

Air compressor, 3x4" type AO
Gifford.
Grinder, water, 20" Diamond No. 64.
Hack saw, No. 2 Racine high speed
practically new.
Hack saw, No. 7 Racine high speed.
Hammer, drop, 100 lb.

Pipe machine, duplex, No. 6 Bignall
& Keeler.
Press, arch, No. 68 Crosby.
Press, bench, Niagara, foot power.
Press, H. W. Dopp, foot power.
Press, No. 20 Rosback, foot.
Screw mch., No. 2 P. & W. pl. hd.

FOR SALE BY

Broadway Machinery Co., 236-238 Broadway, Cincinnati, Ohio

DRILLS AND RADIALS.

20" Foote-Burt, heavy duty \$ 250.
26" Prentice, s. pulley dr. (3) ea. 250.
3" Prentice radials, s. p. drive
through gear box, taper at-
tachment (4) each 900.

20" Barnes 3-spindle \$ 175.
20" Barnes 4-spindle, p. f. 225.
22" Barnes 4-spdl., geared feed 350.
32" P. & W., cone drive 200.
20-18-20 and 22" drills cheap.

SHAPERS AND PLANERS.

8" Davis crank \$ 100.
21" Juengst b. g. crank 400.
24" Acme b. g. crank 600.
28x28x7' New Haven 150.

32x32x8' Gray \$ 800.
32x32x10' American 850.
36x36x10' Pond 900.
36x36x11' Davis & Egan 1000.

GEAR SHAPERS, CUTTERS AND GRINDERS.

No. 12 B. & S. gear s. (4) ea. \$ 750.
Cincinnati gear shaper 850.
No. 12 B. & S. gear cutter 1000.

No. 13 B. & S. gear cutter \$1200.
No. 14 Landis univ. grinder 1000.
No. 3 B. & S. univ. grinder 1200.

LATHES.

14"x 6' Reed, c. r., and h. s. \$ 300.
14"x 6' Fitchburg, c. r., h. s. 300.
14"x 6' Lodge & Shipley q. c. 375.
16"x 7' New Haven, p. r. 150.
17"x 8' Prentice, h. s., c. r. 375.
20"x10' Lodge & Shipley, c. r. 550.

22"x12' New Haven, c. r., h. s. \$ 600.
24"x12' Prentice Bros. d. b. g. 650.
26"x15' Niles, c. r., s. s. 400.
28"x14' Prentice Bros., d. b. g. 1000.
30"x12' New Haven, c. r. 400.
30"x22' New Haven, c. r., s. s. 450.

MISCELLANEOUS.

Boring mill, 18' Niles \$1500.
Boring and turning mill 32"
Rogers, hexagon head 1000.

Hand screw machine, No. 2
P. & W. \$ 250.
Turrets, 2x24 J. & L. (2) each. 950.

SECOND-HAND MACHINERY

FOR SALE BY

McCoy-Brandt Machinery Company

Office and Warehouse 216-218 Penn Ave., Pittsburgh, Pa.

Good Used Equipment.

Blower, No. 2 Buffalo.
Bolt cutter, 14" Morgan, single hd.
Boring mill, 8' Bement, 2 heads.
Boring mill, 14-20' Niles.
Bulldozers, Nos. 2, 3, 4, 5, 8, 29-U
Williams White, No. 12 Ajax.
Crane, 3½-ton, 220 v., d. c., 23' 5" span.
Crane, 6-ton, 230 v., d. c., 16' span.
Crane, 20-ton, 500 v., d. c., 50' span.
Crane, 25-ton, 500 v., d. c., 75' span.
Drill presses, 20" & 36", sliding hd.
Gas engine, 35 h. p., 2 cyl. vertical.
Generator, 3 k. w. 110 v., d. c., 1465 rpm.
Generator, 75 k. w., 3 p., 60 cy. 480 v.,
direct connected to engine(steam).
Generator, 200 k. w., 3 p. 60 cy., 440 v.
Generator set, 75 k. w., 550 v., d. c.
conn. to motor 3-60-440, 1160 r.p.m.
Hammers, 40, 60 and 300 lb., belted.
Keyseater, No. 1 Davis.

Excellent condition—

Lathe, 36"x10' American, q.c., h.s.c.r.
Lathes, 24"x14" and 18"x8' L. & S.,
geared head.
Lathe, 20"x 8' Porter.
Lathe, 20"x 8' Schumacher.
Lathe, 18"x8' 6" L. & D., c.r., t.a., h.s.
Motors, 15, 50, 84, 100 h.p., 220v., d.c.
Motor, 10 h.p., 500 v., d. c.
Pipe machines, 2, 4, 6, 8, 10 and 12".
Planer, pony, 24x6", auto. feed.
Press, s. s. 4000 lb., auto. roll feed.
Presses, No. 19 Bliss equivalent, (4).
Pumps, triplex, 6x8" motor drive.
Punch & shear, 10" tht. cap. 14"x1".
Rolls, straightening, 56" H. & J. No. 0.
Shapers, 14" Hendey, 18" Steptoe.
Shear, rotary bevel, No. 2 Lennox.
Shear, butterfly, 18" knives.
Testing machine, 200,000 lbs. Riehle.
Turret lathe, No. 4 J. & L., 8" h. s.
prompt shipments.

FOR SALE BY

Niles-Bement-Pond Company, 111 Broadway, New York,
Located at Chicago, Boston and New York.

LATHES.

12"x 5' speed lathe.
15"x 7" P. & W. speed lathe.

16"x8' Von Wyck, q. c.

AUTOMATIC SCREW MACHINES.
8" Acme old style 4-sp. automatic.

4" Spencer single turret, auto.

BORING AND DRILLING MACHINES.
3" spindle Pond horizontal boring
and drilling machine.

36" Brown & Sharpe turret borer.

PLANERS.

22"x22"x 6' Harrington hd. planer.
24"x24"x6' Bertram.
30"x30"x 8' Niles, 1 head.

42"x42"x20' Miles, 2 heads.
48"x48"x20' Sellers, 2 heads.

DRILLING MACHINES.

14" 3 spindle Henry & Wright.
17" 4 spindle gang. Jones & Lamson.
No. 14 Pratt & Whitney multiple, 1" capacity, arranged for 16 spindles.
No. 10 Pratt & Whitney multiple, 1½" capacity, 10 spindles.
No. 1 Pawling & H. horizontal, belt drive.
Dallet and Prentice portable drills.

RADIALS.

24' Grant, semi-radial.
32' Bement, plain radial.

4' Barr, old-style.

RAILROAD MACHINERY.

Bement double axle lathe.
Niles double axle lathe.
Putnam heavy axle lathe.

42" Niles car wheel lathe.
79" Pond dbl. driving wheel lathe.

GRINDERS.

12x96" Springfield.
Cut-off machine, 4½" Starr.
Engine, 500 h. p.
Engine, 100 h. p.
Engine, 75 h. p.
File sharpener, American.

Automatic grinder, for saw blades.
MISCELLANEOUS.
Grindstone, 34", iron frame.
Punch, horizontal, 60" throat, cap.
2" hole in 1", weight 47,000 lbs.,
belt driven.

SECOND-HAND MACHINERY

FOR SALE BY

F. H. Kappen & Son, Agents, 93 W. Water St., Milwaukee, Wis.

Air compressor, 6x6x7, steam drive.
Blowers, pressure.
Boilers, stationary.
Bolt cutter, 1" Wells.
Cold saws, Burke and Burr.
Cut-off saw, 13" Smith & Post.
Drill press, sensitive.
Engines, steam and gasoline.
File sharpener, American.
Keyseater, M. & M. No. 2.
Lathe, 14"x8" Prentice, r. & f. rest.

Lathes, 10x36" Shepard, 24"x12' A. & C.
Lathe, 14"x8" Ryerson, c. r., h. s.
Lathe, 16"x8" Porter, p. r., h. spdl.
Lathe, 18"x8" Lodge & S., c. r., t. a.
Miller, No. 4 Garvin, plain.
Motor, 550 v., d. c., 6 h. p.
Pipe mach., No. 00 Armstrong 1"-4".
Planer 24"x24"x6" Gray.
Press, Perkins, 2" stroke.
Speed lathe, 12"x45" Oliver.

FOR SALE BY

Brownell Machinery Co., -

Cutting-off mch., 3" Hurlibut & R.
Drill press, 24" Baker heavy duty.
Drill press, 24" Foote-Burt hvy. duty
Gear generator, 12" Gleason, single
tool, (2).
Gear generator, 15" Gleason double
tool.
Lathes, 16"x7" Oliver, new.
Lathe, 20"x8" Perkins.
Lathe, 20"x12" Perkins.
Lathe, chucking, 20"x6" Florence.
Lathes, 18"x10" Rahn-L., new, (2).
Lathe, 18"x12" Rahn-Larmon, new.
Lathes, turret, 21" Gisholt, (4).

11-13 Eddy St., Providence, R. I.

Milling machine, universal, Hendey
No. 14.
Milling machine, vertical No. 2
Becker, rotary.
Milling machine, vertical No. 4-B
Becker, without rotary.
Milling machine, vertical No. 5
Becker, rotary.
Planer, 22"x22"x5" Flather.
Radial drill, 3' Prentice.
Radial drill, 4' Prentice.
Screw machine, No. 2 Southworth,
wire feed, new.

FOR SALE BY

Frank Toomey, Inc.,

127-131 N. Third St., Philadelphia, Pa.

LATHES AND TURRETS.

26"-48"x14" new dbl. spdl. McCabe
lathes, heavy pattern, (11).
28"x15" Harrington.
25"x10"x6" Johnson, (4).
20"x10" Bullard.
20"x10" Blaisdell.
20"x10" Fitchburg.
19"x10" Kahn-Mayer, (2).
19"x 8" new Sidney, d. b. g., q. c. g.,
swing 21", (6).
17"x 8" new Sidney, d. b. g., q. c. g.,
swing 19", (9).
17"x8" new National, q. c. g.
15"x10" Sebastian.

MISCELLANEOUS.

Bolt cutter, 2 1/2" P. & W.
Drill, 28" Snyder, sliding head.
Drills, 23" new Superior, (3).
Drills, 20" new Superior, (3).
Hammer, 600 lb. Morgan, steam.
Miller, Pedrick & Ayre, universal,
table 48"x30".
Miller, No. 1 new Cincinnati, univ.
Miller, No. 1 1/2 American, plain.
Miller, No. 0 Steptoe, new hand.
Miller, Standard, new hand.

Pipe machine, 10" Bignall & Keeler.
Planer, 42"x42"x10" Fitchburg, 2 hds.
Planer, 22"x22"x8" Powell.
Planer, 18"x18"x5" Pond.
Shaper, 24" Flather, back geared.
Shaper, 20" new Steptoe, b. g.
Shaper, 20" Cincinnati, back geared.
Shaper, 15" Bement, traveling head.
Slotter, 10" Lowell.
Tapping & drilling mch., 36" Baker.

SECOND-HAND MACHINERY

FOR SALE BY

Herman L. Winterer,

908-910 Beach St., Philadelphia, Pa.

LATHES.

22"x12' Blaisdell, b. g., c. r.,
21"x14' Blaisdell, b. g.
21"x10' Lodge & Davis, c. r.
21"x28' Le Blond dbl. combination.
20"x 8' Flather, c. r.
19"x10' Fitchburg, b. g., (2).
18"x12' New Haven, b. g.

18"x12' Walcott, double.
18"x10' Lodge & Shipley, q. c. g.
18"x 8' Blaisdell, b. g., c. r.
17"x 8' Prentice, c. r.
17"x 6' Cincinnati, q. c. g.
16"x 6' Flather, c. r.
And many others.

TURRET LATHES.

4"x28" Pond.
2"x18" American back geared chucking lathe.
7"x14" Potter & J., semi-automatic.

7"x14" Porter & J., semi-automatic.
3"x28" Lodge & S., chucking lathe.
27" chucking lathe.
24"x8' Blaisdell ck'g. lathe with tur.

MISCELLANEOUS.

Bending rolls, 9"x35", d. e.
Boiler rolls, 4'6" drop end.
Boring mill, hor., 48" Beaman & S.
Centering machine, 4" Whiton.
Electric welder, 16" throat, Toledo.
Gear cutter, univ., 20" Gould & E.
Hammer, drop, 850 lbs. Waterbury-F.
Keyseater, No. 1 Baker.

Keyseater, No. 2 Davis.
Keyseater 19"x8" Beaman & Smith.
Keyseater, 18" stroke Morton.
Planers, 20 to 24" with 5 to 8' bed, (6).
Planer, 34"x34"x8' New Haven.
Saw sharpeners, (4).
Shear, power, 10' Bertsch.

Large assortment of Boilermakers' and General Machinery.
Send for complete list.

FOR SALE BY

E. L. Essley Machinery Co., 551-557 Washington Blvd., Chicago, Ill.

BORING MILLS.

51" Bullard, 2 heads, plain table.
30" Colburn, 1 head.

Moline hole-hog, 2 spindle.

DRILL PRESSES.

No. 5 Avey high speed ball bearing,
drills on column, fine shape (6).
8 spindle Gardam multiple, 17" rec-
tangular head.

2 spindle No. 35 H. & W. hi-spd.(2).
4 spindle Henry & W. high speed.
6 spindle Henry & W. high-speed.
26" Hoefer, sliding head.

GRINDERS.

No. 2 Bath universal.
No. 7 Besly double end disc.
No. 4 Brown & Sharpe univ., 12x60".

8"x20" Landis universal.
No. 1 Norton univ. tool and cutter.

LATHES.

38"x19' Fish.
24"x14' Le Blond heavy duty crank
shaft lathe, pan, pump and piping,
rod feed only, q. c. g.

16"x 6' Lodge & Shipley, q. c. g.
24"x10' Lodge & Shipley, q. c. g.
11"x 5' Star.

MILLING MACHINES.

No. 25 Becker-Brainard.
No. 3 Becker-Brainard.

No. 1-B Kearney & Trecker.

PRESSES.

No. 2 American Can, o. b. i., (2).
No. 19 Bliss, o. b. i., (2).
No. 20 Bliss, o. b. i.
No. 21 Bliss, o. b. i.

No. 4 Niagara, o. b. i., new, (2).
No. 5 Niagara, o. b. i., new.
No. 37 Niagara, solid back, new.

SCREW MACHINES.

1½" Acme, friction head.
1½" Cleveland automatics, (2).

1½" Dreses, friction head.
No. 22 Garvin 1 7-16" cap., fric. hd.

MISCELLANEOUS.

Brake, 7' Ohl, up-and-down pattern.
Filer, No. 2 Cochrane-Bly.
Gear cutter, 48" Brainard.
Keyseater, No. 1 Knowles horiz.
Planer, 48"x48"x14' Pond, 1 head.

Sprocket turning and boring ma-
chine combined, Baker Bros.
Turret lathe, 28" Gisholt, style "I".
Valve millers, for brass.

SECOND-HAND MACHINERY

FOR SALE BY

The Metal Specialty Co., 6th & Burns Sts., Cincinnati, Ohio

BOARD DROP HAMMER.

No. 40 Niagara board drop hammer, complete with lifter; height of anvil, 30"; size of pulleys, 20"x4"; weight of hammer, 200 lbs.; weight of anvil, 2,000 lbs.; weight complete, 4,300 lbs.

FOR SALE BY

The Machinery Warehouse, 3705 S. Ashland Ave., Chicago, Ill.
GENERATORS.

The following 125 volt d. c. belted generators. All are rebuilt and in guaranteed condition. To compute capacity of each machine, regard a k. w. to equal 1½ h. p., or suitable for twenty 16-candle power carbon lights. Write for stock list of 250 volt d. c. machines.

1-7½ k. w. Northern generator, 1250 r. p. m.
1-10 k. w. Fairbanks-Morse generator, 1200 r. p. m.
1-11½ k. w. Crocker-Wheeler generator, 1250 r. p. m.
1-30 k. w. Western Electric generator, 775 r. p. m.
1-60 k. w. Northern generator, 750 r. p. m.
1-100 k. w. Sprague generator, 775 r. p. m.

FOR SALE BY

Peninsular Machinery Co..

Countersht., 1 15-16" with 18x5 t. & l.
Chuck, 24" 4-jaw. Ind.
Drill, 14" single spindle sensitive.
Drill, 12" Barr sensitive.
Drill, 4-spindle Bickford.
Drill, 14" Allen sensitive.
Drilling head, 2-spindle, 3" to 8".
Flexible shaft, with c. s., Stow.
Forming roll, 14 ga. 48" long.
Grinder, emery, No. 3 Blount.
Grinder, cutter, No. 1 Garvin.
Grinder, cutter and tool, LeBlond.
Grinder, twist drill, New Yankee.
Groover, No. 3 Niagara.
Hack saw, No. 11 Millers Falls.
Key lathe, 12" Cobb, double end.

110 Beaubien St., Detroit, Mich.

Lathe, 16x6 LeBlond, engine.
Lathe, 14x5 LeBlond, rapid prod't'n.
Lathe, 20x8 LeBlond.
Miller, hand, No. 1 Whitney type.
Press, No. 3 Model A Perkins, pl.
Press, No. 33E Michigan, geared.
Straightening press, No. 3A Geier.
Screw machine, plain, No. 6 Foster.
Screw machine, plain, No. 1 Foster.
Screw machine, grd., No. 5 Foster.
Screw machine, grd., No. 10 Foster.
Screw machine, grd., No. 8 Foster.
Screw machine, plain, No. 3 Foster.
Speed lathe, 11"x4' Blount.
Speed lathe, 13"x5' Blount.
Speed lathe, 16"x6' Blount.

FOR SALE BY

Cullen Machinery Co.,

340 Leader News Bidg., Cleveland, Ohio

Boring, drilling and tapping machine, horizontal, Pond, belt driven, floor plate 10x12', diameter of spindle 8", greatest distance spindle to floor plate 90", with outboard support; elegant condition.
Cylinder boring and facing mch., horiz. Beaman & Smith traverse of bar 8'.
Hydraulic riveting plant absolutely new, consisting of R. D. Wood 96" triple pressure gap riveter, 75 ton cap.; 10 ton tower crane, accumulator and pump, 1500 lb. pressure.
Hydraulic riveting plant, consisting of 15' locomotive gap riveter, triple pressure, 100 ton capacity, cap. 1½ rivets; 25 ton tower crane, pump and accumulator, 1500 lb. pressure; used not over 30 days.
Lathe, 48"x20' Lodge & Shipley, double geared.
Locomotive crane, Industrial, 4 wheels, 3-ton cap. at 20' radius standard gauge.
Milling machine, Newton horizontal and vertical, motor driven; one vertical, two side heads, table 8' long, 45" between housings.
Punch, new, Long & Allstatter Style A, belt driven, depth of throat 10", 3" stroke, cap. 2" in one inch thickness, 8"x1" flats, 2" round bars.
Rotary planer, motor driven, 30" Ingersoll, 8' traversing table, 22" vertical adjustment of head.

SECOND-HAND MACHINERY

FOR SALE BY

Cyril J. Bath & Co., Offices 428 Leader News Bldg., Cleveland, O.
Warehouse 1031 West Front St.

First-Class Used Tools for Prompt Delivery.

Auto., No. 23 New Britain, new.
Auto., No. 22 New Britain, like new.
Automatic 7"x14" Potter & J.
Boring mill, vertical, 7" Pond, 2 swivel heads.
Boring machine, horiz., 2-sp. Bement, with swivel table 42"x42" square.
Cylinder borer, vertical, 2-spindle Baker, good as new.
Cylinder grinder, No. 60 Heald, late model, good as new.
Drill, 30" Aurora, sliding head.

Drill, vertical, Pond, heavy.
Flywheel, 24" adj. stroke.
Gap grinder, 18"x34"x72" Queen City, self-contained, good as new.
Keyseater, No. 2 Baker, 18"x14" cap., with equip., first-class cond.
Lathe, eng., 30"x16" Finfield, old style.
Lathe, 30"x12" Pond, heavy type.
Nut tapper, 4-spdl. Acme, 14" cap.
Punch press, pl., Stiles 14" stroke.
Radial, plain, 5' Pond, belt drive.
Straddle miller, Bement, heavy.

FOR SALE BY

The Strong, Carlisle & Hammond Co., Cleveland, O., Detroit, Mich.

ENGINE LATHES.

14"x6' Blaisdell, p. r.
16"x8' Bullard, p. r.
16"x8' Lodge & Shipley patent head, q. c. g., pan bed.

FOX LATHES.

14"x6", square arbor, set-over tailstock, (2).

TURRET

18" Lodge & Davis, gear feed head, automatic chuck.
14" W. & S. plain head.
28" Gisholt complete, motor driven, 110 or 220 d. c.

UPRIGHT DRILLS

4' Bickford, gear box, t. a.
20", w. & l. fd., s. b., (2).
Sensitive drills.

MULTIPLE DRILLING MACHINES.

Detroit 5-spindle horizontal semi-automatic.

PLANERS.

52"x52"x24' Betts, 2 heads.

BORING MILLS.

26" Barrett horizontal cylinder boring, (2).
Head plate boring lathe.

GRINDERS.

Warner & Swasey cock grinders.
Size "D" Gorton, 18" discs.

SHAPERS.

14" Fitchburg, traveling head.

SCREW MACHINES.

1½" Cleveland automatic, 3-hole.
2" Cleveland automatic, 5-hole.
No. 0 Brown & Sharpe automatic.

20" Smith & Mills, b. g. crank.
2" Hartford automatic, 5-hole.
No. 00 Brown & Sharpe automatic.

MISCELLANEOUS.

Bolt cutter, 14" Wells, single head.
Cold saw, No. 11 Higley.
Cold saws, 12" Burke, (2).
Grinder, internal, type "D. E."
Hisey, 12" extension, 110 d. c.
Grinder, tool post, type "B" Hisey,
110 d. c.
Keyseater, Morton, draw stroke.

Oil separators, No. 150 Curtis, ball bearing, (2).
Pipe machine, 4" Williams.
Profiler, 2 spindle, No. 2 Garvin,
Wesson drive.
Pulley lathe, 36" Stevens, with boring attachment.

SECOND-HAND MACHINERY

FOR SALE BY

Joseph Beal & Co.,

453-457 Atlantic Ave., Boston, Mass.

TURRET LATHES.

2 Windsor 22"x7' b. g., f. h. Fox turret lathes, turret mounted on carriage, power feed, hand cross feed, 14" hole in spindle, 11" diam. turret, six 14" turret holes, with oil pan, triple friction countershaft. Price, \$550 each, f. o. b. Boston.

GRINDERS.

2 Bath No. 2½ duplex internal grinders, size of table 10x84, power feed, with countershafts. Price, \$350 each, f. o. b. Boston.

FOR SALE BY

Wayne Machinery Co.,

Taylor St. & L. E. R. R., Fort Wayne, Ind.

Bolt cutter, 1" Acme.
Bolt cutter, 1" Acme.
Brake, 8" J. M. Robinson.
Drill, 12" Barnes, geared.
Drill, 14" Champion, geared.
Drill, 22" Springfield, b. g., p. f.
Drill, 22" Barnes, p. f., b. g.
Drill, 30" Snyder, p. f., b. g.
Gear cutter, Walcott.
Grinder, No. 1 Woodward & Rogers,
surface.
Lathe, 8x45" Rockford engine.
Lathe, 15"x54" American No. 1, brass.
Lathe, 12"x5" Fairbanks.

Planer, 12"x12"x24" Wilkenson Co.
Planer, 16"x16"x3" Whitcomb.
Planer, 24"x24"x6" Silk Mch. Tool Co.
Press, plain, No. 32 Toledo.
Riveter, No. 530 Prouty.
Riveter, 1" Shuster, rotary blow.
Screw machine, 16" P. & W., g. f. h.
Screw machine, 16" Pratt & Whitney,
s. f. head.
Shaper, 16" Hendey.
Tire welder, No. 4 L. & A.
Turret lathe, 10" Warner & Swasey.
Welding machine, No. 6-A Toledo
electric butt welder.

New tools for any requirement.

FOR SALE BY

The Osborne & Sexton Machinery Co.,

Columbus, Ohio.

LATHES AND TURRET LATHES.

13-15-16 and 18 O. & S., h.s.c.r., new.
14"x6" Bradford, power feed turret.
14"x 6" Blaisdell, taper. (2).
20"x 8" Hamilton, h.s., d.b.g., new (8).
20"x16" Putnam, overhauled.
21"x14" Fifield, comp. rest.
23"x18" Blaisdell, overhauled.

SHAPERS AND PLANERS.

15" Hendey tool & die shaper.
15" American, crank.
16" Steptoe crank shaper.
16" Smith & Mills.

24"x16" Dietz, 5" h. s., c. r., taper.
15"x 6" Fox universal lathe.
16"x 6" back geared turret.
18"x 6" Mueller, turret on shears.
2" x 24" Jones & Lamson, (2).
24" Gisholt, 4" hollow spindle.
1" Garvin hand screw machine.

MISCELLANEOUS.

Boring mill, 6' Niles double head.
Broacher, 64" stroke Waterbury.
Buffing lathes, all sizes.
Centering machine, 6" P. & W.
Cut-off machine, 2" Davis.
Die miller, No. 1 Thurston.
Drills, flexible shaft (2).
Drills, hi-speed, 23-32"-32 tapered.
Drills, sensitive, 1, 2, 3 and 4 spindle.
Drill, 23", sliding head.
Drill, turret, 6-hole Quint.
Drill, 7-spindle, adj. centers.
Gas engines, 4 to 150 h. p.
Grinder, tool, Gleason.
Grinder, surface, 24x12.
Hammer, power, 100 lb. upright.
Hammer, drop, 750 lb. Toledo.

Lathe, 24" Gisholt, 4" hol. spdl.
Miller, No. 3 Cincinnati, dbl. bk.grs.
Miller, No. 7 Becker.
Miller, Gooley & Edlund, 38" fd.
Miller, univ., Kempsmith No. 2.
Motors, 2 to 25 h. p., 3 phase, 220 v.
Pipe machines, 2". (2).
Press, 7,000 lb. Waterbury, 64" stroke.
Press, 102" Ohi. 24000 lbs.
Riveter, 1" Shuster, 20" throat.
Rolling mill, 22"x13" Toledo, 16000 lb.
Shear, squaring, 36" gap, 15" cap.
Straightening rolls, 30".
Tapper, vertical, Garvin No. 1.
Threading mch., Webster & Perks.
Variable speed transmission, Reeves.
Wirestraighteners, No. 8 Shuster, (2).

SECOND-HAND MACHINERY

FOR SALE BY

J. L. Osgood,

Cutting-off machine, 2" H. & R.
Cylinder borer and grinder, 24"
Davis, jigs and cutter bars.
Disc grinder & press, No. 6 Gardner.
Drill, 14" Reed, and chuck.
Drill, 20" Snyder, p. f. and a. s.
Drills, 20" Davis, b. g., a. f., (2).
Grinder, plain, 12"x24" Modern.
Lathe, 12"x8' Robbins, r. & f. rest.
Lathe, 18"x8' Hamilton, c. r., chuck
fitted.

45 Pearl St., Buffalo, N. Y.

Lathe, 18"x12' Greaves & K., c. r.,
chuck fitted.
Millers, hand, Whitney, new (2).
Miller, Carter & Hakes, Lincoln.
Miller, Lincoln, 12" Cincinnati.
Piston & ring mch., Gridley, motor.
Shaper, 15" Hendey.
Surfacing machine, emery belt, 14'
Peerless.
Turret lathe, 7"x14" Potter & J. auto.
Turret lathe, 20"x8' Fay & Scott.

FOR SALE BY

Girard Machine & Tool Co., 491-493 N. Third St., Philadelphia, Pa.

LATHES

48"x22' Pond, c. r.
22"x 9' 6" Warsaw, c. r.
21"x16' Fifield, c. r.
21"x 8' Wood Light, r. f. r.

17"x 8' Johnson, c. r.
14"x 6' Lodge & Shipley, hol. spdl.
14"x 6' Hendey.
14"x 5' Fitchburg, r. f. r.

MISCELLANEOUS

Bolt cutters 14" Acme and 14" Wells Bros.
Boring mills, turret head vertical, 36" Brown & Sharpe, (2).
Broaching machine, No. 2 Lapointe.
Cold cutting-off saws, capacities 4", 5" and 6" round.
Gear cutters, 36" Whiton and 36" Gould.
Milling machines, No. 2 Pratt & Whitney, plain table 20"x7"; No. 3 Garvin
hand plain millers.
Pipe cutting and threading machines, 4" and 6".
Planer, 24"x24"x6" New Haven, with one head.
Radial drill, 20" Harrington.
Slab miller, 17"x8" Beaman & Smith, with two horizontal spindles.
Stamping and punching presses, a large number of the open back inclinable,
straight side and arch types.
Turret lathes, Jones & Lamson, 3x36.

FOR SALE BY

The Randle Machinery Co., 1739 Powers St., Cincinnati, Ohio

ENGINE LATHES

14"x 6' Flather, hollow spindle, 3 $\frac{1}{2}$ ' between centers.
16"x 6' Flather, hollow spindle, 3 $\frac{1}{2}$ " between centers.
15"x 4' 9" Sebastian, hollow spindle, 28" between centers.
16"x 6' Reed, hollow spindle, 3 $\frac{1}{2}$ ' between centers.
16"x 6' Barker, hollow spindle, 3 $\frac{1}{2}$ ' between centers.
16"x 6' Monarch, hollow spindle, 3' between centers.
16"x 8' Gray, hollow spindle, 5' between centers.
18"x 8' Monarch, hollow spindle, 5' between centers.
18"x 8' Rahn-Larmon, hollow spindle, 5' between centers, quick change
gear, practically new.
18"x10' Bradford, hollow spindle, 7' between centers, with taper attachments.
18"x12' Greaves & Klusman, double hollow spindle, with 2 head stocks, two
tail stocks, one steady rest, two compound rests, two countershafts. Can
be used as two lathes for small work.
21"x10' Imperial, hollow spindle, takes 7' between centers.
21"x12' Ohio, takes 9' between centers.
24"x 9' Pratt & Whitney, hollow spindle, 5 $\frac{1}{2}$ ' between centers.
24"x 9' heavy Muller solid spindle lathe.
24"x12' Lodge & Davis solid spindle heavy lathe.
We also have in stock engines, boilers, motors, generators, and power plant
machinery of all sizes and kinds.

SECOND-HAND MACHINERY

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,

210-212 Washington Ave.,

St. Louis, Mo.

LATHES.

11"x 5' Prentiss.
14"x 8' Putnam.
17"x 8' Cincinnati.
18"x 8' Lodge & Davis.

18"x 8' Rahn & Larmon, q. c.
20"x 8' Rahn & Larmon, q. c.
24"x 12' Economic, quick chg. gear.
28"x 12' Reed.

DRILLING MACHINES.

20" Barnes.
28" Lodge & Davis, sliding head.

42" Niles gooseneck.
Tapping machine for pipe fittings.

PLANERS AND SHAPERS.

24"x 24"x 6' American planer.
36"x 30"x 8' Powell planer.
60"x 72"x 16' Fitchburg planer.

14" Lodge & Davis shaper.
24" Steptoe shaper.

AIR COMPRESSORS.

6"x 6" belted.
8"x 8" belted.
10"x 10"x 10" steam driven.
5 h. p., 3 ph., 60 cy., 220 volts.
17 $\frac{1}{2}$ h. p., 3 ph., 60 cy., 220 v.
25 h. p. 220 volt, d. c.

12"x 12"x 16" steam driven.
600 cu. ft., belted.
1600 cu. ft., steam driven.
50 h. p. 220 volt, d. c.
50 k. w. 250 volt, d. c. generator.
55 h. p. 500 volt, d. c. motor.

MOTORS.

Bolt cutter, 2" Schlencker.
Bolt cutter, 1 $\frac{1}{2}$ " Foote-Burt.
Boring machine, 2-spindle horizontal, Newton.
Hammer, 80 lb., Yeakley.
Hydraulic press, 25-ton vertical.

Pipe machine, 4" portable.
Pipe machine, 6" Williams.
Punch and shear, W.-W. No. 17.
Punch and shear, Bremmer comb.
Riveter, 10" cylinder compression.
Turret lathe, 3"x 36" Jones & L.

MISCELLANEOUS.

Second-Hand Wood-Working Machinery

For a large list of used wood-working machinery, consult the **Wood-Working**

Machinery List, a publication similar to this but devoted to the advertising of saw-mill and wood-working machines. A copy may be had on application to the publisher, **A. H. Hitchcock, 1220-1235**

Caxton Building, Chicago, Ill.

Pattern Shop Machinery

Special Prices if you refer to this ad.



Band Saws

Chicago No. 00 27 in. Wheels
" No. 0 32 " "
" No. 1 36 " "



Saw Tables

Chicago No. 5 Stationary Table
" No. 9 Tilting Table
" No. 10
Boring attachment if wanted.



Jointers

8 in., 5 and 6 ft. tables and guard.
12, 16, 20, 24 and 30 in., 7 ft. tables
and guard.

Trimmers, Lathes, Core Box Tools, etc.

Ask for full descriptions

Chicago Machinery Exchange

1214-1228 Washington Boulevard, Chicago

Steel Die

Embossed Stationery

looks like solid prosperity. The psychology of creating a favorable impression by mail must necessarily include impressive stationery—neither cheap nor showy—just neat and rich. For that purpose our Steel Die Embossed Stationery is unsurpassed.

It is probably not as expensive as you think

Ask for free Specimen Book and Prices

American Embossing Co.

192-96 Seneca St.,

Buffalo, N. Y.

Milling Machines.

- | | |
|---|---|
| 3 Lincoln Millers, No. 4
Hendey.
1 B.-B. No. 25 | 1 Briggs Miller, Type B.,
large size. |
| 3 Lincoln Millers, No. 7 B. B. | 4 Hand Millers.
2 Oscillating Millers. |

Miscellaneous.

- | | |
|--|--|
| 2 Drills, 20" Barnes.
Drill, 4-spindle, with power
feed. | 3 Lathes, 21"x12' Perkins. |
| 3 Foundry blowers, Root,
small. | 3 Lathes, 26"x12' Hamilton. |
| 1 Gear Cutter, 30" G. & E.,
spur and bevel. | Lathe, speed, with collets. |
| 1 Grinder, automatic, for cold
saws up to 25" diam. | Press, power, heavy, back
geared. |
| 1 Grinder, internal, Landis. | Press, power, small. |
| | 10 Screw machines, P. & W.
automatic. |
| | 1 Slotter, 10" New Haven. |

T. Crowther & Company, Inc.

170 Oliver Street, Boston, Mass.

Lathes in Good Condition

In Stock for Immediate Delivery

- One 21"x10' Bradford, compound rest, power cross feed, rod and screw feed, 1 $\frac{1}{2}$ " hollow spindle, friction countershaft.
One 18"x10' Flather, compound rest, 1 $\frac{1}{2}$ " hollow spindle, rod and screw feed, power cross feed, friction countershaft.
One 21"x10' Putnam, c. r., rod and screw fd., pwr. cross fd., fric. c. s.
One 24"x12' Draper, 1" hollow spindle, compound rest, rod and screw feed, friction countershaft, taper attachment.
Two 16"-8' Whitcomb-Blaisdell dbl. bl. gr., quick change gr., (new).
One 18"x10' Hendey, tie bar hd., taper att., drawn-in collets, q. c. g.
One 16"x8' Flather, comp. rest, quick change gears, taper attach.
One 14"x6' American, rise and fall rest.
One 15"x6' Blaisdell, rise and fall rest.
Six 14"x6' Monarch, quick change gears, compound rest, (new).
Two 14"x6' Monarch Standard Engine Lathes, (new).
One 18"x10' geared head Whitcomb-Blaisdell.
One 16"x8' geared head Whitcomb-Blaisdell.
Two 16"x6' R. E. Reed Stud Lathes, with oil pan and pump.

Factory & Mill Supply Co.

173 Oliver St., Boston, Mass.

New and Used Machinery. Write for Large List of Used Tools

"New York's Greatest Clearing House--New York's Lowest Prices--J.J. McCabe"

High-grade Tools

for shops who prefer them to the
"ordinary kind"

These Machines will bear the most critical inspection

Milling Machines "Planer type."

24"x24"x 6' horizontal spindle, Ingersoll Milling Machine Co.
24"x24"x 14' horizontal and vert. spindles, Ingersoll Milling Machine Co.
30"x30"x 12' horizontal and vert. spindles, Ingersoll Milling Machine Co.
36"x22"x 8' vertical spindle, Newton Machine Tool Works.
36"x36"x 14' horizontal spindle, Bement-Miles & Co.

Heavy Multiple-spindle Drills.

18-spindle, capacity 1" holes, countershaft drive, Baush Mch. Tool Co.
16-spindle, cap. 1" holes, arranged for motor drive, Baush Mch. Tool Co.
4-spindle, gang style, table 6' in length, wt. 10,000 lbs. Niles Tool Wks.

Long-Bed Heavy Lathes.

62" swing, 24' bed, triple-geared, double plate apron, New Haven.
56" swing, 28' bed, triple-geared, Putnam Machine Co.'s.
28" swing, 36' bed, hollow-spindle, Fay & Scott.

Heavy Tools in General.

16' set bending rolls, drop-end housing, engine driven, Hilles & Jones.
61" gap horiz. punch, like new, capacity 1½ thru 1¼", Bement-Miles.
50" rotary planer, with extra bed plate, No. 2 Cleveland.
14" plate planer, for edge planing, Wm. Sellers & Co. s.
72"x72"x 8' planer, three heads, Wm. Sellers & Co. s.
48"x48"x 14' planer, two heads, Niles Tool Works.
36"x36"x 12' planer, two heads, for frog and switch work, G. A. Gray Co.
7' arm radial drill, with motor drive, Niles Tool Works.
5' arm radial drill, C-shaft drive, Pond Machine Tool Co.
36" swing heavy duty drills (two), for heaviest work, Foote-Burt.
36" swing upright drill, sliding-head, back-gears, Prentice Bros.
22" swing full automatics (2), with 2" holes, Potter & Johnston.
3 15/16" bar horizontal boring and drilling machine, Binsse.
18" stroke slotting machine, Bement-Miles & Co.
86" swing upright boring and turning mill, two heads, Niles Tool Wks.
80" sw. upright boring and turning mill, two heads, Pond Mch. Tool Co.
60" swing upright boring and turning mill, two heads, Niles Tool Wks.

J. J. McCabe, 149 Broadway, New York

Some Lathes

No. 79—22"x16' 5-Step Cone Head, L. & S. Lathe with 2 headstocks and 2 tailstocks on one bed.
No. 87—24"x12' (Single Pulleys) Engine L. & S. Lathe.
No. 881—2"x24" Jones & Lamson Turret Lathe.

OTHER MACHINES

Nos. 333-4—Two No. 6 Whitney Hand Milling Machines.
No. 2000—18"x42" Greenwald-Brown auto. cut-off 150 h. p. st. engine.
No. 1337—Crompton-Knowles Loom Wks. Keyseater, 60" st., 48" sw.
No. 680—Safety Tool Grinder, 4"x32" emery wheel.
No. 1379—Universal Swivel Table for radial drill.
No. 2083—6" Hersey Rotary Water Meter.
No. 1336—No. 90 Sturtevant Blower.
No. 2331—Sturtevant Blower, 24" outlet.
No. 2033—Commercial Elect. d.c. 40 k.w. 110 v. Generator, comp. wound 1—15 h. p. Gas Engine, 218 r. p. m.
No. 1690—Rockford Straightening Machine with countershaft for work up to 8' long, 24" in diameter.
No. 1446—No. 4 D. E. Whiton Centering Machine 6' bed.

USED MOTORS

No. 991-7—Two d. c. 10 h. p. 220-volts, 1150 r. p. m. Reliance Motor.
3 h. p. 220 volt, d. c., 1150 r. p. m. Reliance Motor.
1½ h. p. Bullock, 220 volt, d. c., 600 r. p. m.
¾ h. p. Western Electric, 110 or 220 volt, 400-1675 r. p. m.

DELIVERY NOW

The Lodge & Shipley Mch. Tool Co., Cincinnati, Ohio,
U. S. A.

LATHES.

13"x5' Blaisdell.	16"x6' Lodge & Shipley, q. c. g.
14"x6' Von Wyck.	16"x6' Blaisdell.
14"x6' Prentice, q. c. g.	20"x8' Reed.
14"x6' LeBlond, geared head, motor drive.	26"x12' Reed.
14"x6' Reed.	30"x10' Fifield, triple geared.

TURRET LATHES.

3"x36" P. & W. chucking, power feed.
18" D. & E., geared friction head.
2"x24" J. & L.; bar equipment.

SCREW MACHINES.

Two No. 55 National-Acme Automatics.
Two 2½" Gridley, single spindle.
No. 1½ Pratt & Whitney, geared friction head, p. f. to the turret.

GRINDERS.

No. 3 B. & S. universal.	No. 2 Norton tool room.
10"x50" Norton plain.	

RADIAL DRILL.

5' Dresses plain. | 6' Dresses plain.

Chandler & Farquhar Company

419-425 Atlantic Ave.,

Boston, Mass.

Used Machinery For Immediate Delivery

Grinders.

- 1—16"x72" Queen City Plain Gap Grinder, capacity 30"x15" in gap, all regular equipment, used less than two months.
- 1—12"x42" No. 3 Modern Plain Grinder, new last March, all regular equipment. Equal to new.
- 1—16"x72" Brown & Sharpe No. 5 Universal Grinder with internal attachment, all in good operating condition.

Planers.

- 1—30"x30"x8' Gray Spur Geared Planer, single head.
- 1—30"x30"x8' Cleveland Open Side, one head on rail and one side head, used but little and equal to new machine.
- 1—56"x56"x18' Planer, Spur Geared, 2 swivel heads on rail, machine old but in good operative condition, delivery about 90 days.
- 1—60"x60"x12' Pond Machine Tool Co. Spur Geared Planer, four heads, heavy duty type; condition good as new; immediate delivery.

Slab Millers.

- 2—24"x24"x5' Ingersoll Planer Type Slab Milling Machines.
- 1—48"x48"x10' Ingersoll Planer Type Slab Miller, with auxiliary vertical spindle. No side heads.

Lathes.

- 1—16"x14' American Quick Change Gear Engine Lathe, actual swing 18 $\frac{3}{8}$ " over V's, compound rest, full equipment, used about 6 months. Good as new, with chuck fitted.
- 1—20"x17' Jones & Lamson Engine Lathe, 158" centers, hollow spindle, cuts threads 3 to 40, transposing gears for metric threads, compound and plain rests, raising blocks to swing 31". Excellent condition.
- 1—28"x10' Pond Engine Lathe, compound rest, center rest, screw cutting, 5-step cone, takes 6' between centers, double friction countershaft. Good heavy machine.

Miscellaneous.

- 1—1" Bolt Cutter, Acme, double head, full set of dies, class A machine with pump etc., used but little, fine condition.
- 1—No. 3 Keyseater, Little Giant, with posts and cutters for keyways 1" to 2 $\frac{1}{4}$ ".
- 1—Milling Machine, Garvin No. 4 $\frac{1}{2}$, table 9"x42", back geared, double friction countershaft, good condition.
- 1—No. 9 Beaudry Upright Power Hammer, 300 lbs. ram, estimated blow 1800 lbs., capacity 5" steel, weight 5500 lbs. Good condition, used but little.
- 1—26" Shaper, Smith & Silk Triple Geared, shifting belt, fair condition.
- 1—Oliver Universal Pattern Makers Saw Bench, revolving arbor for two saws, all attachments. Good as new.

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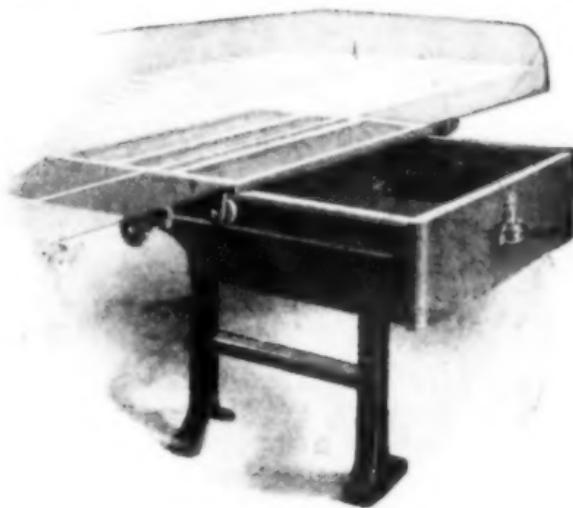
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